ARCHAEOLOGICAL SURVEYS IN NGARDMAU AND NGCHESAR, REPUBLIC OF PALAU

by

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INTRODUCTION

The purpose of this report is to describe archaeological sites identified during surveys in Ngardmau and Ngchesar, Republic of Palau performed between January through April 1983. This report is part of an overall program of the Office of Historic Preservation of the Trust Territory of the Pacific Islands to establish an inventory of cultural resources in each of the entities of the Trust Territory. The inventory is to be used in managing the cultural resources with the goal to protect the most important resources and preserve information on those resources that are being destroyed as a result of development. The surveys in Ngardmau and Ngchesar (Figs. 1, 2 and 3) were designed to permit some general predictions of the kinds of archaeological sites that can be expected in areas which have not yet been surveyed on Babeldaob Island. When this work is combined with previous reports of surveys and excavations (see Gūmerman et al. 1981; Lucking 1981; Osborne 1966, 1979; Masse and Snyder 1982; and Snyder 1983) it should give the cultural resource manager a reasonable idea of how much and what kinds of archaeological work will be necessitated by impending developmental projects.

The figures and descriptions of sites are first presented for Ngardmau, and then for Ngchesar. In each section the descriptions of traditional sites are presented before the descriptions of historic sites. Historic sites are the remains of events that occurred after 1783. In each of these areas the only historic sites identified are those relating to the Japanese administration, 1914-1944. All other remains are tied to events that appear to have their beginnings prior to 1783, and thus relate to unrecorded traditional times.

From July 1982 through April 1983 the weather in Palau was uncharacteristically dry. This drought resulted in the burning of large areas of both cleared and forested lands. Especially in areas of short grass and ferns the burning left many hectares of land barren. Parched soil was exposed for stretches of many tens of meters in all directions.

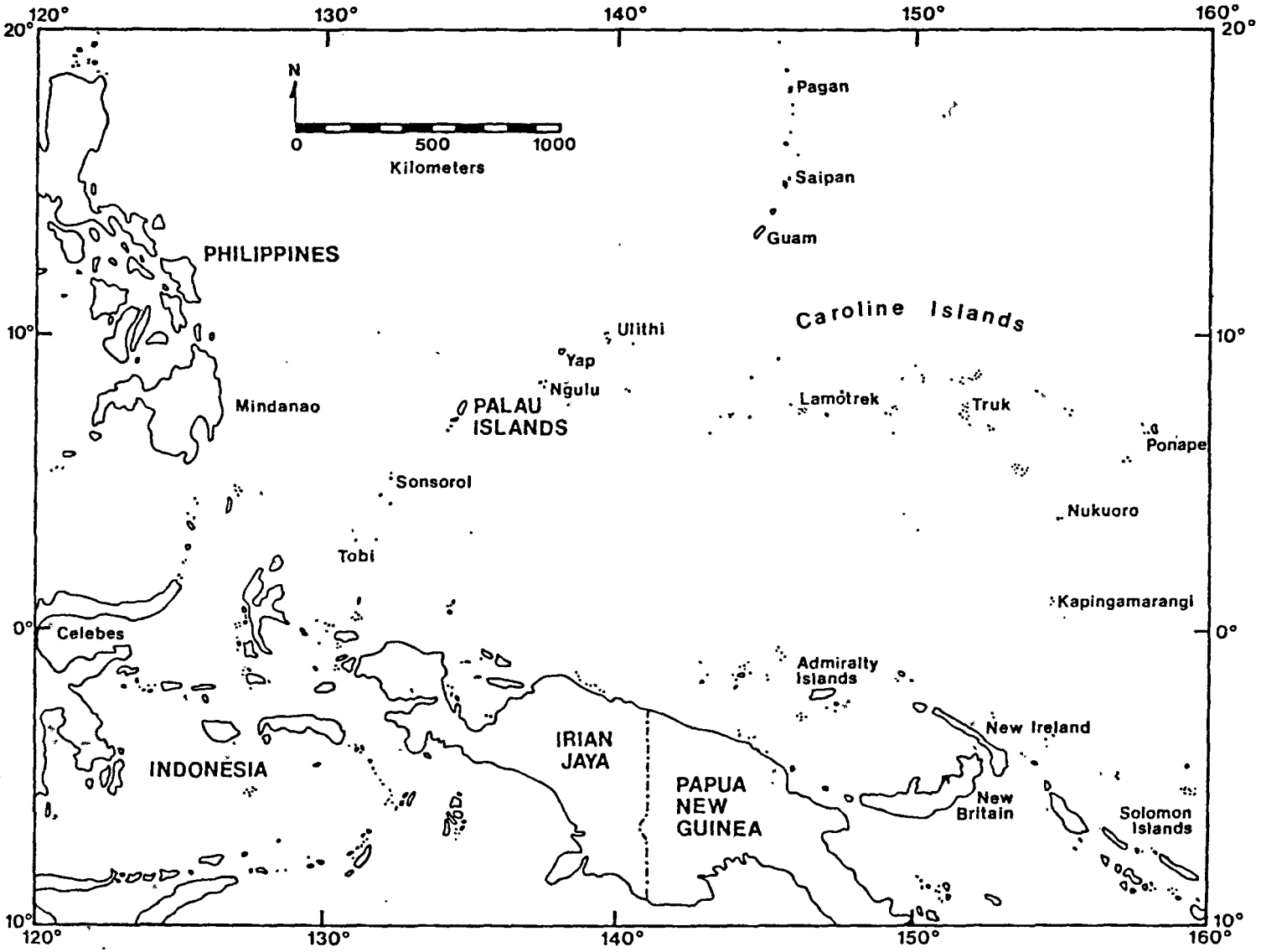

Figure 1. The Pacific Ocean showing the location of the Palau Islands.

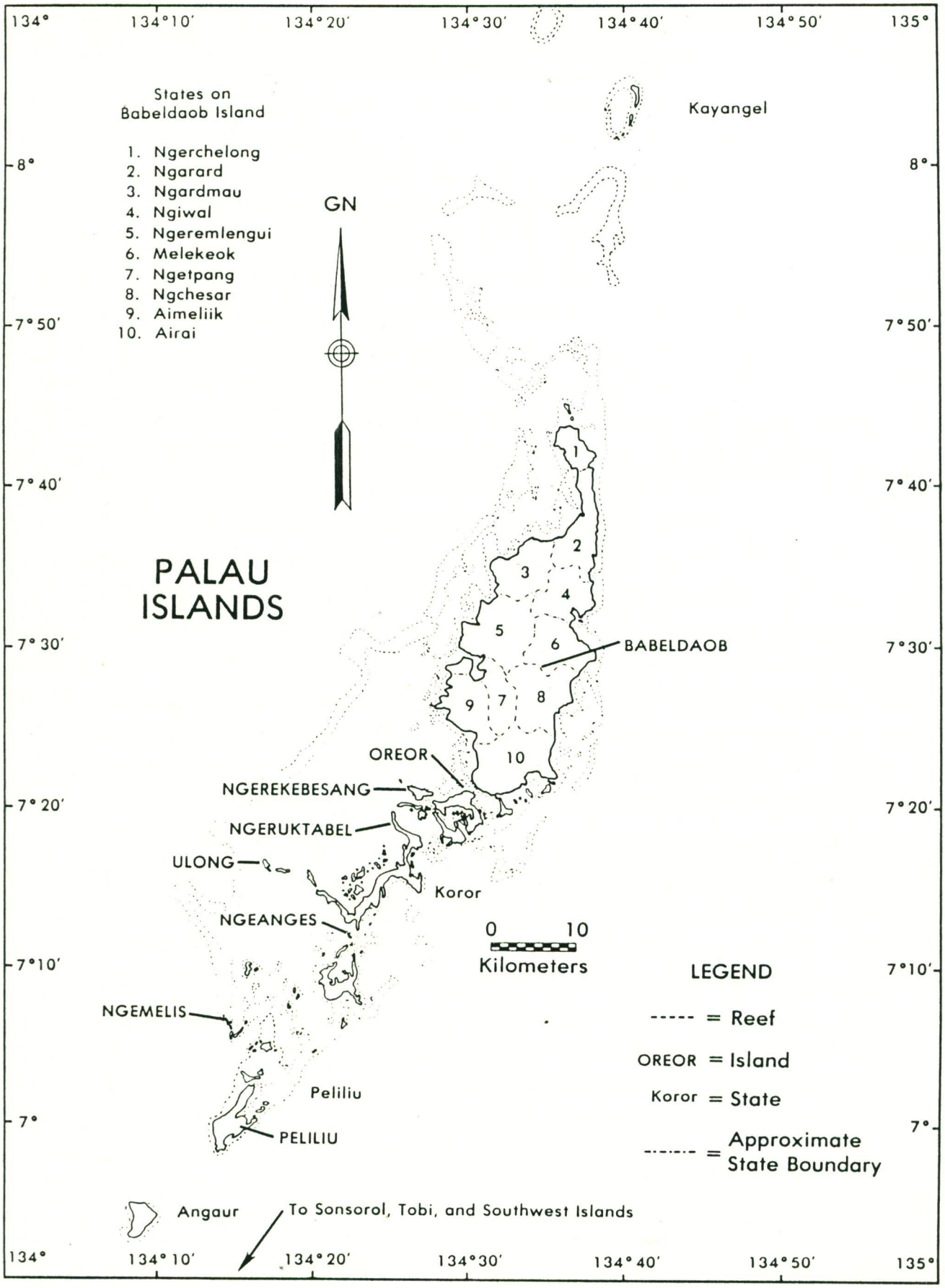

Figure 2. The Palau Islands depicting modern approximate state boundaries.

In terms of archaeological surveying this created a most unusual situation. The shape of the surface of the ground and the distribution of artifacts on the surface of the ground were perhaps more clearly exposed for close inspection than they have been for any other previous archaeological work in Palau.

It must be made clear that the author believes that the wholesale burning of large tracts of land in Palau is harmful over the long run. It is believed that excessive burning causes damage to the soil and to the ecology. The author neither advocates nor condones the kind of wholesale burning that has taken place during this drought.

The sets of contour maps presented for each area, Ngardmau and Ngchesar, are based on the new 1:10,000 U.S.G.S. maps of Palau. These maps are computer compilations based on the 1969 and 1971 series of 1:200 aerial photographs. The vegetation zones shown in this report are taken from these maps and are also based on the aerial photographs. The vegetation zones show areas that are forested, in mangrove swamp, in coconut plantations, or lacking forest cover (i.e. clear). The word clear is used to refer to a variety of areas covered by savanna, fern, or grass that may or may not have been intentionally cleared of forest cover; the word is not used to indicate that the cleared areas were once forested nor that they were cleared intentionally.

The place names shown on the place name maps are taken from the new maps and from interviews with informants. In general the informants agreed with the maps (though there was less agreement with the spellings) or, they added information to the maps. When there was disagreement between the information on the maps and the information from informants the author used his discretion to use one, the other or both names given for a single geographic feature. There is still considerable confusion in Palau as to proper spelling. The spellings used in this report are subject to change.

The methods used in the field consisted of a pedestrian survey. The author and a surveyor from the Division of Cultural Affairs, accompanied by a local man who was employed for his knowledge of the area, walked transects across the previously delimited area to be surveyed. The space between transects depended on the vegetation and terrain. In the forest and on steep ground the spacing usually was wide, anywhere from 50 to 100 meters. In clearings where the going was easy the spacing was narrow, usually 10 to 20 meters. Where artifacts were found the spacing between transects often was narrowed to about 5 meters in order to carefully observe the size and nature of the distribution of artifacts. In general, collections of sherds were not made.

The path followed by the surveyors is shown for each area by a dashed line overlaid on contour maps. The width of the dashed line is approximately 15 meters to 20 meters as shown on the maps. This roughly corresponds to the area of ground observed during the surveys. As can be seen, only a very small fraction of the area was actually covered during the surveying. Of course some artifacts, such as terraces, are more visible than other artifacts and can be seen from a greater distance. In general these maps give a clear idea of the intensity of the surveys.

In each of the areas a map of the features of the major traditional settlement is presented. These maps of the features show the plans of the villages. They were made using measurements obtained in the field. The field measurements were determined using a Brunton-like compass, tape, metric rod and hand level, beginning with a point that could be closely matched with the 1:10,000 maps. The lengths and widths of the features are presented in tables that accompany the maps.

Numbering System

In this report a new system for numbering sites in Palau is used. The sites are coded by a 4 part system. The first part of the code is the letter "B" which stands for Palau (Belau). The second part is the two letter code for each of the 16 states: in this case "NR" stands for

Ngardmau and "NC" stands for Ngchesar. The third part is the village area designation. Each state is divided into areas called village areas. I have chosen to call these subdivisions village areas rather than hamlets or villages to avoid confusion with small and large clusters of houses. Although these areas are not clearly shown on the maps of Palau, the concept is clearly understood by Palauans. The village area is the land around a principle village that is controlled by the chiefs of the village. The village may or may not be presently inhabited and the chiefs may or may not live in the village, and there is usually some disagreement about the boundaries and who actually has jurisdiction. The site maps in this report make an initial attempt to show the village areas for the areas that were surveyed. The fourth part of the code is the site code. Each site in each village area is given a number consecutively beginning with 1.

The reasons for adopting the numbering system described above are threefold. First, this system parallels the system used by the Bishop Museum, with modifications for Palau's circumstances, thus permitting comparisons of data reported by the Bishop to data reported from Palau without too much difficulty (see Ayres and Haun 1978:20). Second, this system facilitates the organization of the information on sites. It will be easier to keep track of the sites and information on the sites with this system than with some older systems used in Palau. Third, the most important, the numbering system directly reflects the involvement of the people who are responsible for the land in the responsibility for the care and preservation of cultural resources. It is hoped that this numbering system will be used for all future archaeological research conducted in the Palau Islands.

The boundaries for the village areas are shown on the site maps as "archaeologist's boundaries." These boundaries, as with state boundaries, have not been surveyed and are not official. The archaeologist's boundaries are to be used only in reporting the numbers of sites; they have no political or legal legitimacy.

In this report the code "IF" stands for "isolated find" and is used to identify the location of single artifacts, especially where their location is in a dubious context.

In this report artifact is defined as an object displaying evidence of human activity, and site is defined as an area in which artifacts are found. In practice, a site was defined in the field as the smallest area in which a continuous spread of artifacts could be observed. When a break in the distribution was found or a natural feature was encountered that broke a distribution, a boundary for the site was defined. Given the nature of the distributions of artifacts across the land in Palau it often appears that a "splitter's" approach to defining sites, such as used in this report, is somewhat arbitrary. However it is felt that an approach that lumps large areas into an archaeological area is of limited use in addressing questions of change in the settlement system, and that the data presented here justify the use of this splitter's approach to defining sites. Further, the splitter's approach is most useful from a managerial perspective as the smaller areas permit greater flexibility in protecting certain remains than do larger areas.

The most common artifacts observed are potsherds, areas of stone paving and terraces. Features are kinds of artifacts that are recognized by context and are usually too large to be carried back to the laboratory for analysis, e.g., an area of stone paving. Given the differences in size among these three kinds of artifacts it is often difficult to examine the relationships among them. The data presented in this report should be useful in studies of these relationships. In addition to the data from the survey, data were collected from a series of test pits which were dug during the survey. The small test pits, 50 cm by 50 cm, were located in specific areas to obtain data on the nature of the sites. All artifacts collected in shoveling and troweling the 10 cm levels have been sent to laboratories at Southern Illinois University at Carbondale for processing and analysis. All portable artifacts encountered were collected. The descriptions of the test pits are presented in separate sections following the descriptions of the sites.

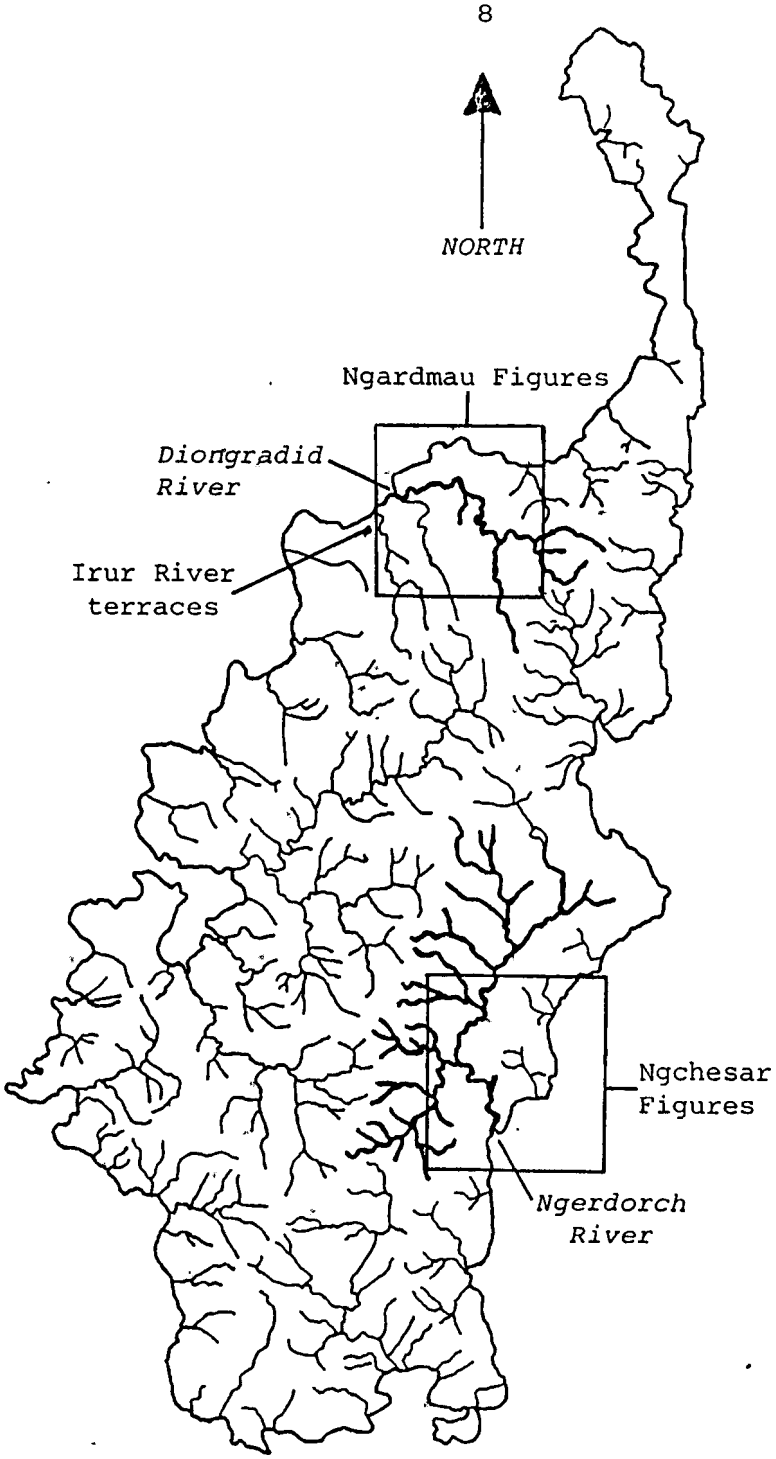

Figure 3. Babeldaob Island showing areas for figures for Ngardmau and Ngchesar.

NGARDMAU STATE

Background

Ngardmau is located in the northwest corner of Babeldaob Island (Figs. 2 and 3). In general the land is rugged with steep hillslopes that are deeply dissected by streams and rivers (Fig. 4). The bottom lands are flat and most often forested, but the ridges are usually covered with short grasses and ferns (Figs. 5 and 6). Table 1 lists the most commonly observed plants in a short transect made near Medallaiechad Falls. The soils are generally poor and rocky. In the interior there were large areas of bauxite-rich soils but a major portion of these have been removed in strip mining operations (Fig. 7). The Diongradid River runs westerly from the western slope of the high ridge which parallels the east coast. The river stretches to the west coast; together with its tributaries the river comprises one of the larger watersheds in Palau (Fig. 3). Except for several short intervals of rapids and falls the grade of the river is gentle. At the time of the survey the river was only about 3 meters wide and only some 30 centimeters deep. Above the mangroves it would have been easy to wade the river at almost any point. In the mangroves the bottom is very soft and the depth of the water changes with the ebb and flow of the tide.

The path followed by the surveyors is shown in Fig. 8. Emphasis was placed on the open savanna west of the villages. The three villages of Ngetbong, Ngerutoi and Urdmau are currently inhabited and usually are referred to as Ngardmau, as though they are one village. Other place names referred to in this report are shown on Fig. 9.

During the survey, which involved more than 200 hours of work over the course of a week, a detailed map was made of the sites that were identified (Figs. 10, 11 and 12). The detailed map of the features in the villages was made using a Brunton-like compass and tape.

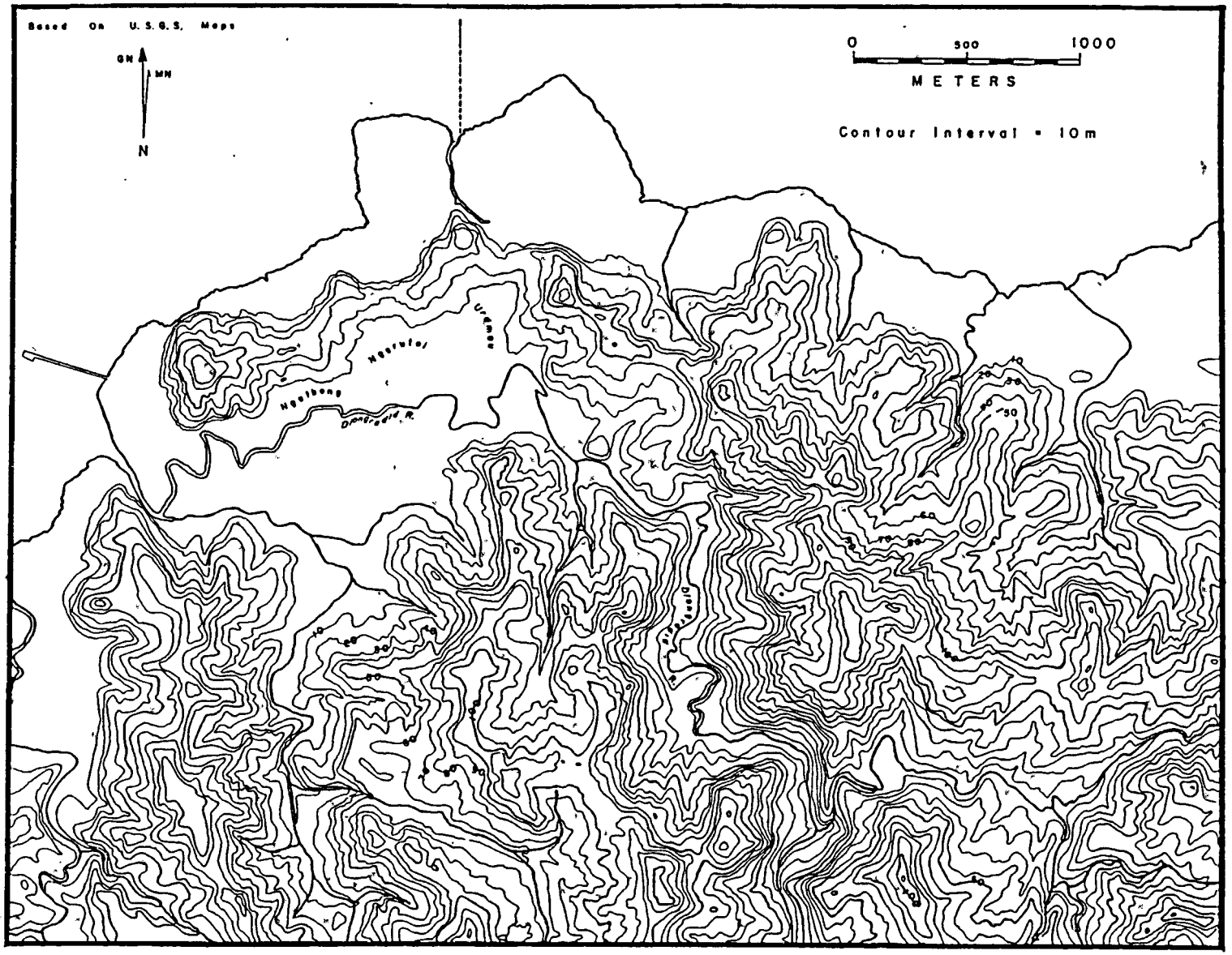

Figure 4. Contour map of the area of the survey in Ngardmau.

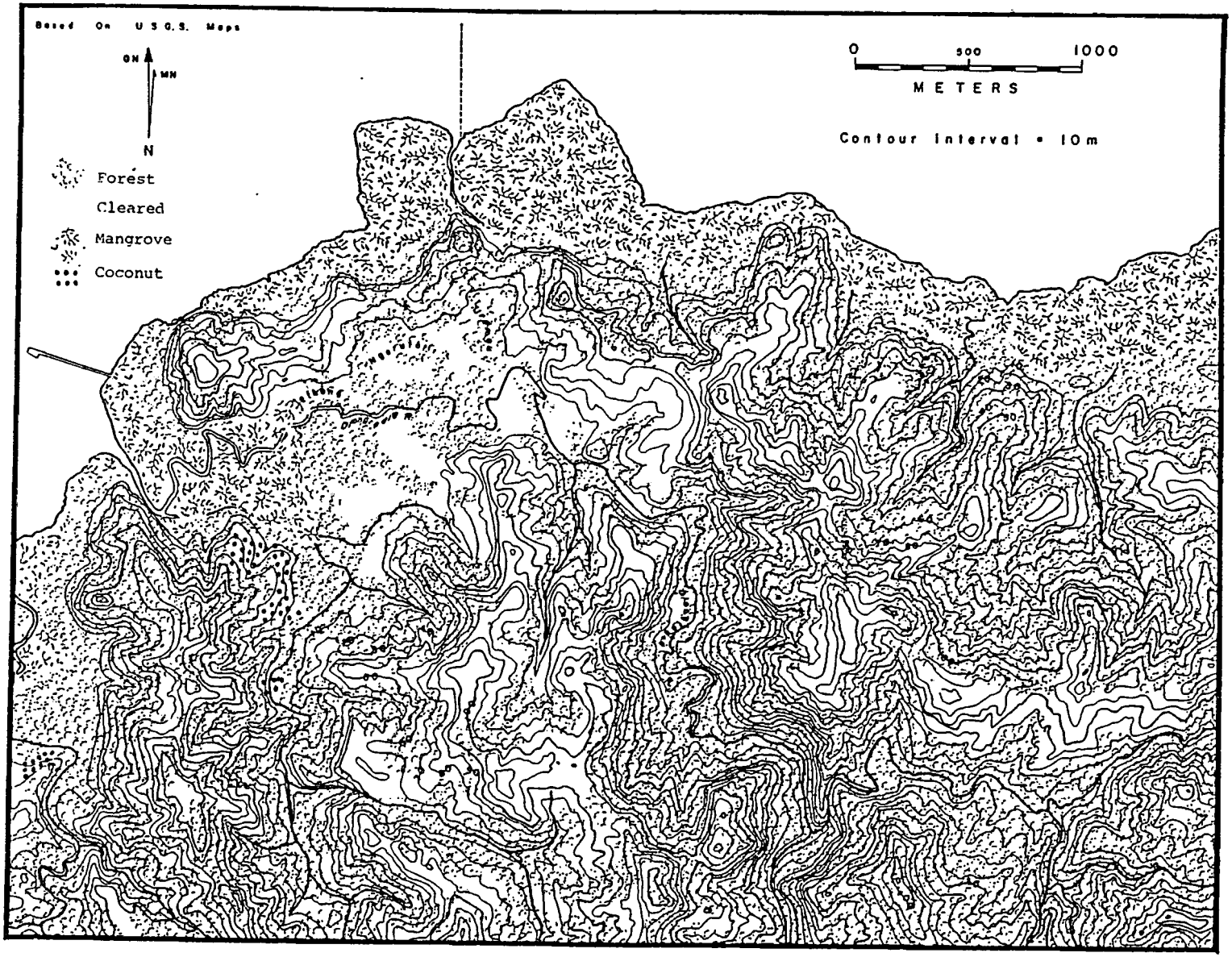

Figure 5. General vegetation zones for the area of the survey in Ngardmau.

TABLE 1

PLANTS COMMONLY SEEN IN A TRANSECT NEAR MEDAILLAIECHAD FALLS, NGARDMAU

Palauan Name	Scientific Name* (if known)	Common Name* (if known)
Bkau**	*ROSACEAE Parinarum palauense*	
Chelangel**	*HIPPOCRATEACEAE Hippocratea macrantha*	
Kelelecharm**	*ANACARDIACEAE Camphosperma brevipetiolata*	
Kesiil	*MYRTACEAE Eugenia reinwardtiana*	
Tonget**	*ANACARDIACEAE Semecarpus venenosa*	
Ksid	*Loganiaceae fagraea ksid*	
Chemeridch	*APOCYNACEAE Cerbera* sp.	Cerbera
Cheritm**	*ROSACEAE Parinarum glaberrimum*	
Beokl	*VERBENACEAE Vitex negundo*	Vitex
Blaches	*VERBENACEAE Gmelina elliptica*	
Chebouch**	*PALMAE Pinanga insignis*	
Orredakl	*LILIACEAE Dracaena multiflora*	
Cheues	*ANACARDIACEAE Rhus taetensis*	
Korangs	*BARRINGTONIACEAE Barringtonia racemosa*	
Titol**	*GUTTIFERAE Gareinia mangostana*	Wild Garcinia
Ngmui	*ICACINACEAE Urandra ammui*	
Chelsau	*TILIACEAE Trichospermum ledermannii*	
Bedel	*EUPHORBIACEAE Macaranga carolinensis*	Macaranga
Chedebsungl	*CAPPARIDACEAE Crataeva speciosa*	
Chelebiob**	*RHAMNACEAE Alphitonia carolinensis*	
Kisaks	*LEGUMINOSAE Pongamia pinnata*	Pongamia
Miich	*COMBRETACEAE Terminalia samoensis*	Tropical Almond
Chebtui**	*SYMPLOCACEAE Symplocos palauensis*	

(continued)

Table 1 (continued)

Palauan Name	Scientific Name* (if known)	Common Name* (if known)
Boboch		
Cheskiik	*MYRTACEAE Decaspermum raymundi*	
Matakui	*MELASTOMATACEAE Melastoma Malabathricum*	Indian Rhododendron
Detimel	*HIPPOCRATEACEAE Salacia naumannii*	
Misderrak	*MYRTACEAE Eugenia cumini*	
Lulk	*MORACEAE Ficus microcarpa*	Banyan
Btaches	*GUTTIFERAE Calophyllum inophyllum*	Alexandrian Laurel

* Based on Guide List of Plants of The Palau Islands, Demei O. Otobed, Chief Entomologist, 1977.

** most common plants in the transect.

Figure 6. Open savanna; facing southwest across B:NR-1:10, foreground, and B:NR-1:9, background.

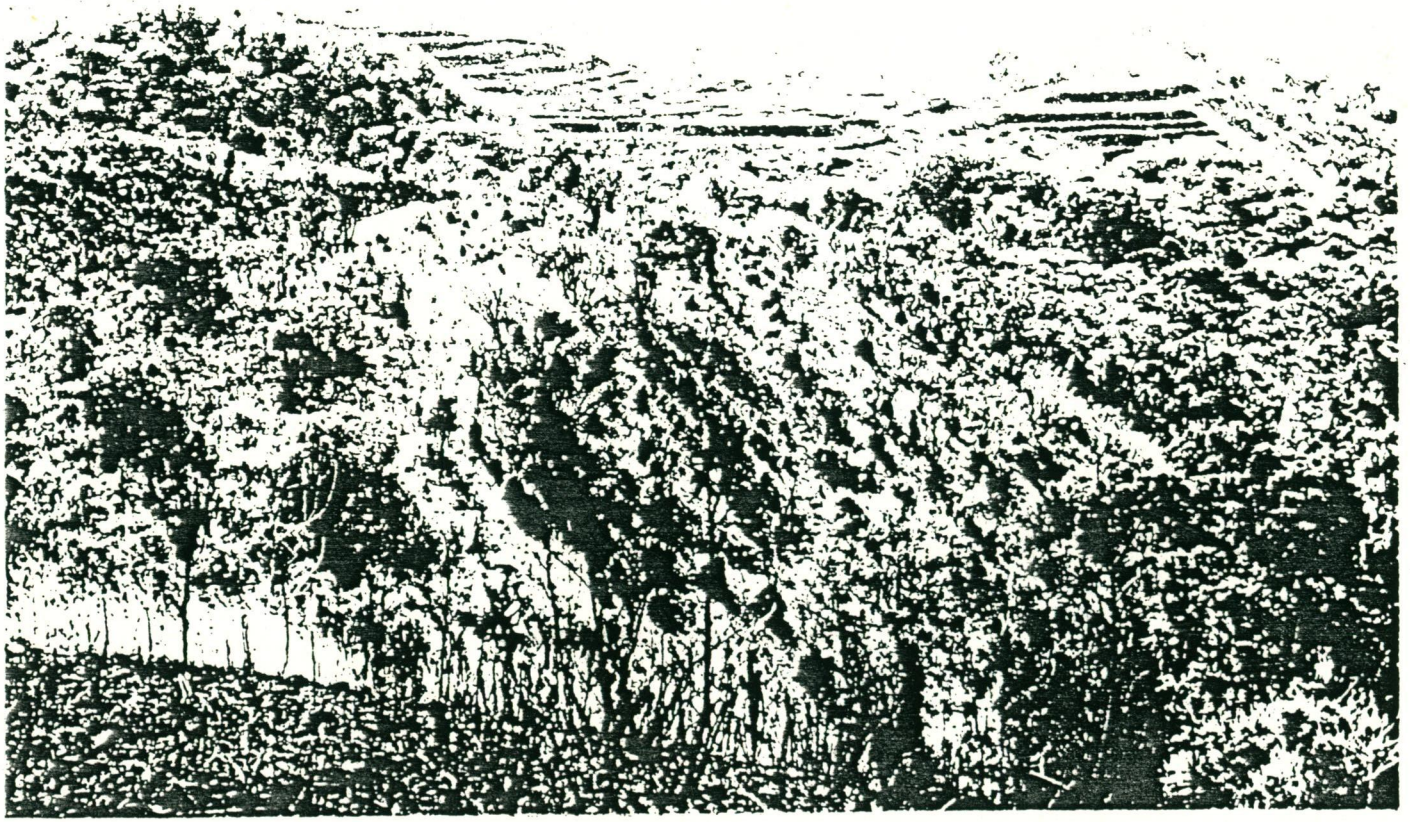

Figure 7. Scars left by strip mining in the 1940s; facing southwest across open brush on a ridge west of Mekirong Hill to B:NR-5:11, left, and B:NR-5:10, right.

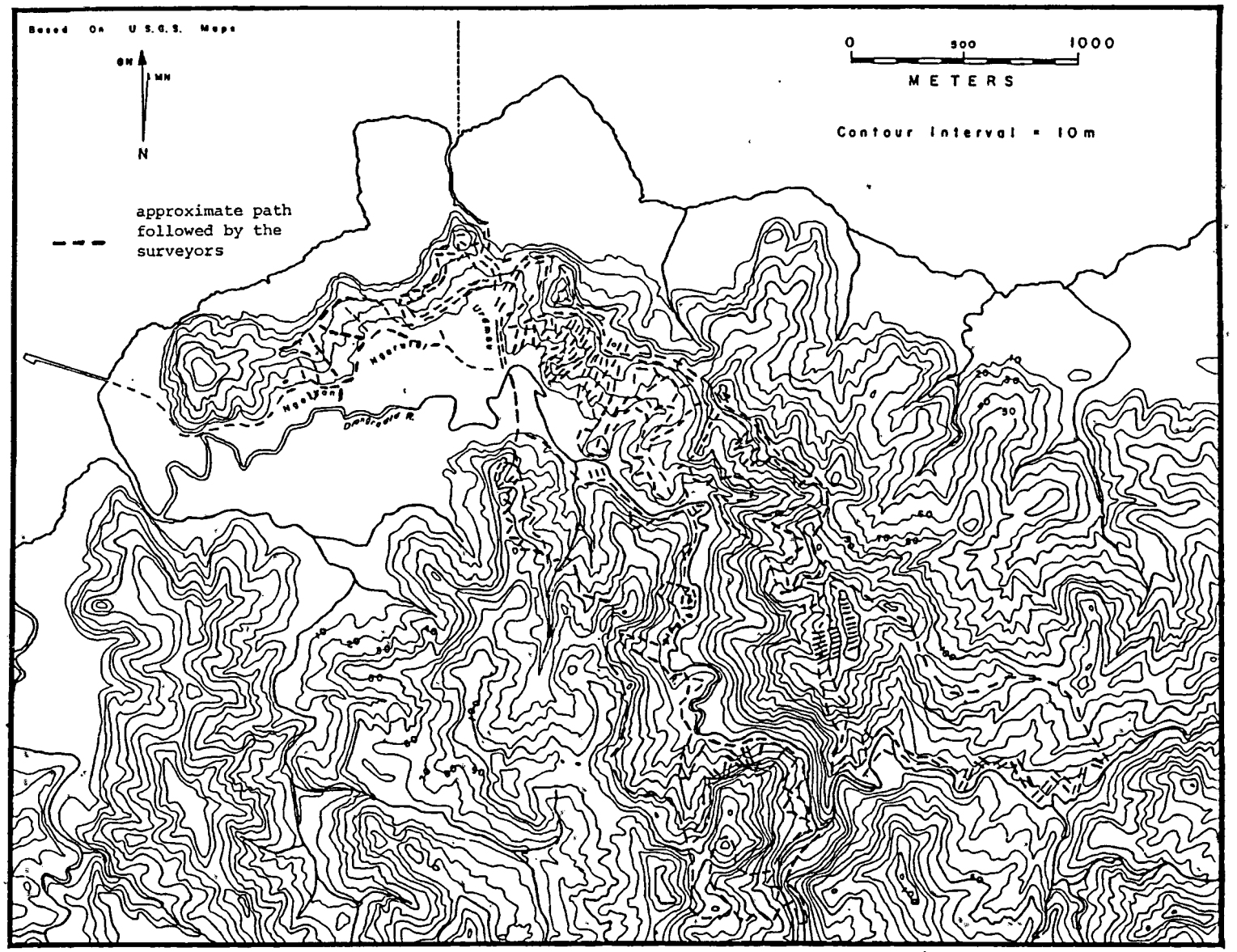

Figure 8. Approximate path followed by the surveyors in Ngardmau.

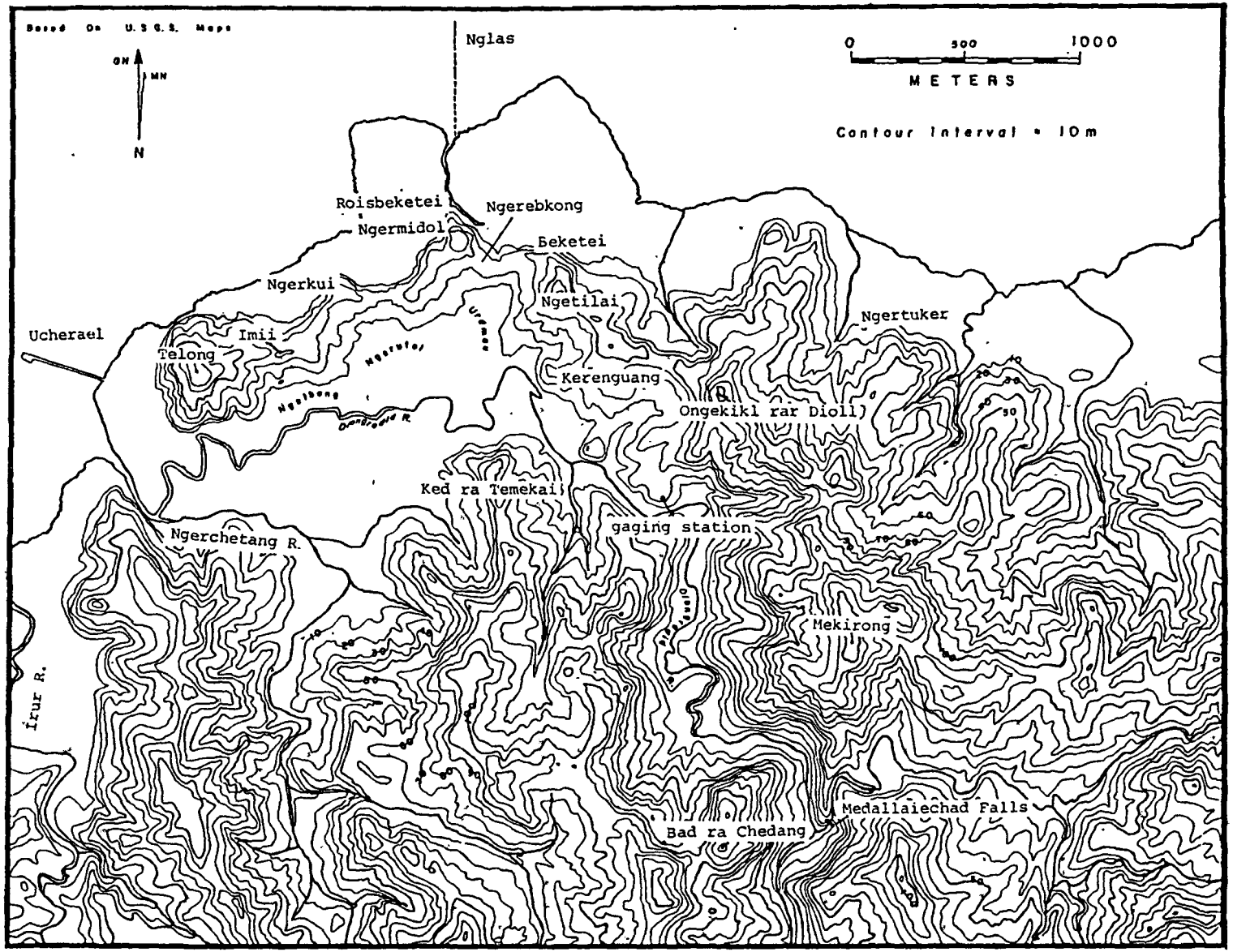

Figure 9. Place names in Ngardmau.

Archaeological Background

Osborne describes several of the manifestations in this area, which he designates as B23 (1966:215-217). He noted the many stone platforms and terracing, and concluded that this area "... should be studied for a week or two..." (1966:216). The maps, test pits and descriptions in this report are the first step in an intensive study in Ngardmau. Also, Osborne noted the terracing southwest of the villages, apparently referring to the terraces I observed on the Irur River (Fig. 3). I did not visit these terraces, but they should be investigated.

Traditional Sites

Traditional sites are remains associated with events before 1783, the arrival of the English and guns. Currently it is not possible to distinguish different periods of time for traditional sites based on surface remains. Table 2 lists all of the sites identified in Ngardmau. The traditional sites are shown on Fig. 10 and a detailed map of the features in the villages is presented in Fig. 11. Table 3 lists the features shown on Fig. 11 with their Palauan names and measurements of their lengths and widths.

Urdmau Village Area

B:NR-1:1 is the traditional village of Urdmau (Figs. 10 and 11, Table 3). Several areas of stone paving were recorded. The site is located on a forested ridge east of Roisbeketei. The Bai ra Urdmau platform is on the top of the ridge east of Roisbeketei (Fig. 11: B:NR-1:1, F. 1). There are two tables on the platform which are described by Osborne (1966:215, Figure 67a). There is a gateway, a stone wall on either side of the path, at the west edge of the bai. A path leads west from the gateway to B:NR-2:1, a village site on the south face of Roisbeketei. To the east of the platform is a small terraced hill. The hill rises only about 4 meters above the platform in two steps. The top of squared. There are "footcatchers" (see Osborne 1966:150-155, Figure

TABLE 2

SITES IDENTIFIED IN NGARDMAU

Site Code	Artifacts and Features Observed*					
	Sherds	Chert	Terraces	Stonework	Shell	Historic Constructions
B:NR-1:1	p	-	p	p	-	p
B:NR-1:2	p	-	p	-	-	p
B:NR-1:3	p	-	p	p	p	-
B:NR-1:4	p	-	-	p	-	p
B:NR-1:5	-	-	p	-	-	-
B:NR-1:6	p	-	p	-	-	p
B:NR-1:7	p	-	p	p	-	-
B:NR-1:8	p	-	p	p	-	p
B:NR-1:9	p	-	p	-	-	p
B:NR-1:10	p	-	-	-	-	-
B:NR-1:11	p	-	p	-	-	-
B:NR-1:12	p	-	-	-	-	-
B:NR-1:13	p	p	-	-	-	-
B:NR-1:14	p	-	p	-	-	-
B:NR-IF-1:1	p	-	-	-	-	-
B:NR-2:1	p	-	p	p	-	p
B:NR-2:2	p	-	p	-	p	p
B:NR-2:3	p	-	p	p	-	p
B:NR-2:4	p	-	-	-	-	-
B:NR-2:5	-	-	-	-	-	p
B:NR-2:6	-	-	-	-	-	p
B:NR-3:1	p	-	-	p	-	p
B:NR-3:2	p	-	p	-	-	-
B:NR-3:3	p	-	p	p	-	p
B:NR-3:4	p	-	p	-	-	-
B:NR-3:5	-	-	-	-	-	p
B:NR-3:6	-	-	-	-	-	p
B:NR-3:7	-	-	-	-	-	p
B:NR-3:8	-	-	-	-	-	p

Table 2 (continued)

Site Code	Sherds	Chert	Terraces	Stonework	Shell	Historic Constructions
NR-4:1	p	p	-	-	-	-
NR-4:2	p	-	-	-	-	-
NR-5:1	p	-	p	-	-	p
NR-5:2	p	-	p	-	-	-
NR-5:3	p	-	p	-	-	p
NR-5:4	-	-	-	-	-	p
NR-5:5	-	-	-	-	-	p
NR-5:6	-	-	-	-	-	p
NR-5:7	-	-	-	-	-	p
NR-5:8	-	-	-	-	-	p
NR-5:9	-	-	-	-	-	p
NR-5:10	-	-	-	-	-	p
NR-5:11	-	-	-	-	-	p
NR-5:12	-	-	-	-	-	p
NR-5:13	-	-	-	-	-	p
NR-IF-5:1	p	-	-	-	-	-
NR-IF-5:2	p	-	-	-	-	-

p = presence of artifact or feature observed at the site.

- = artifact or feature was not observed at the site, and probably is absent.

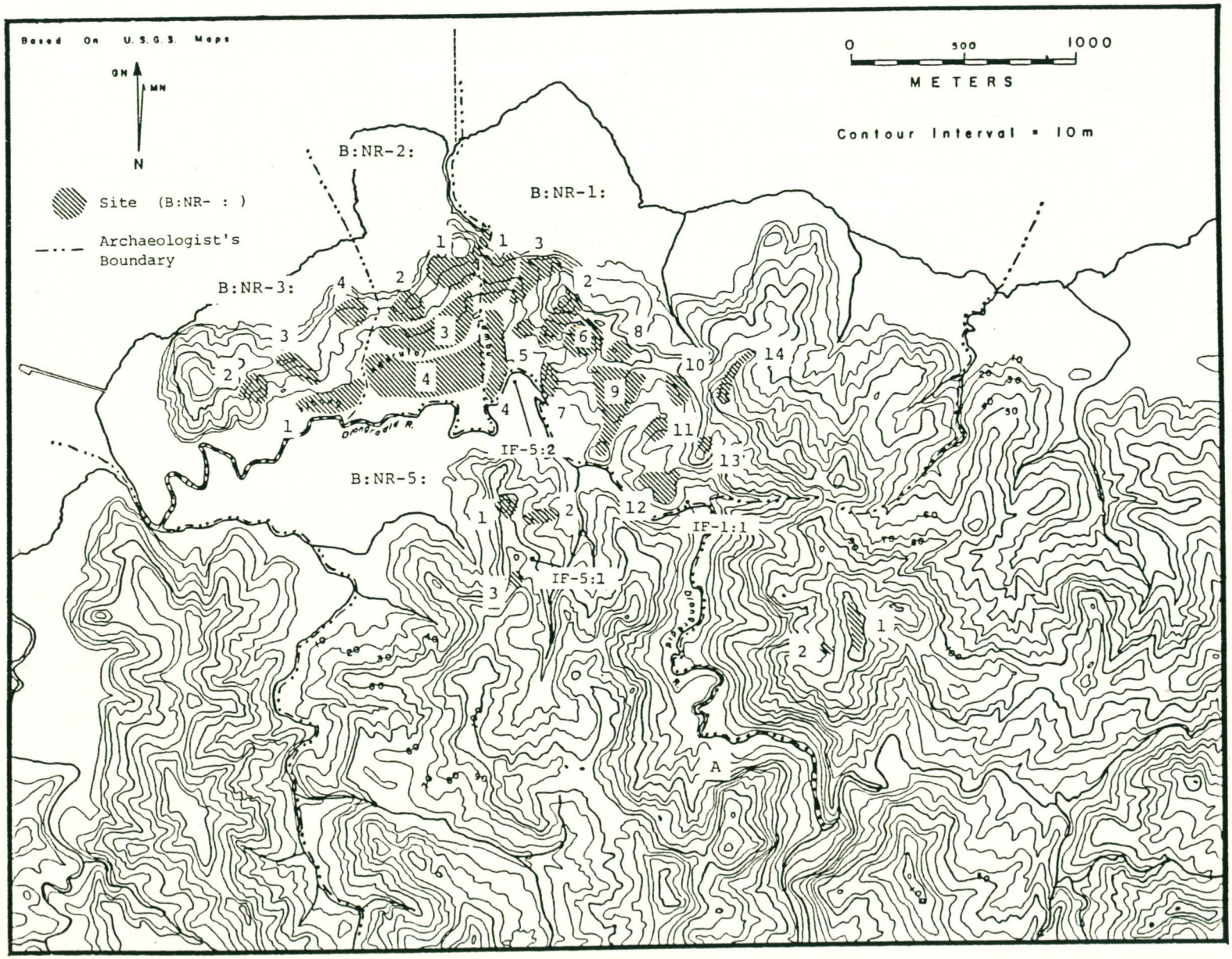

Figure 10. Traditional sites identified in Ngardmau.

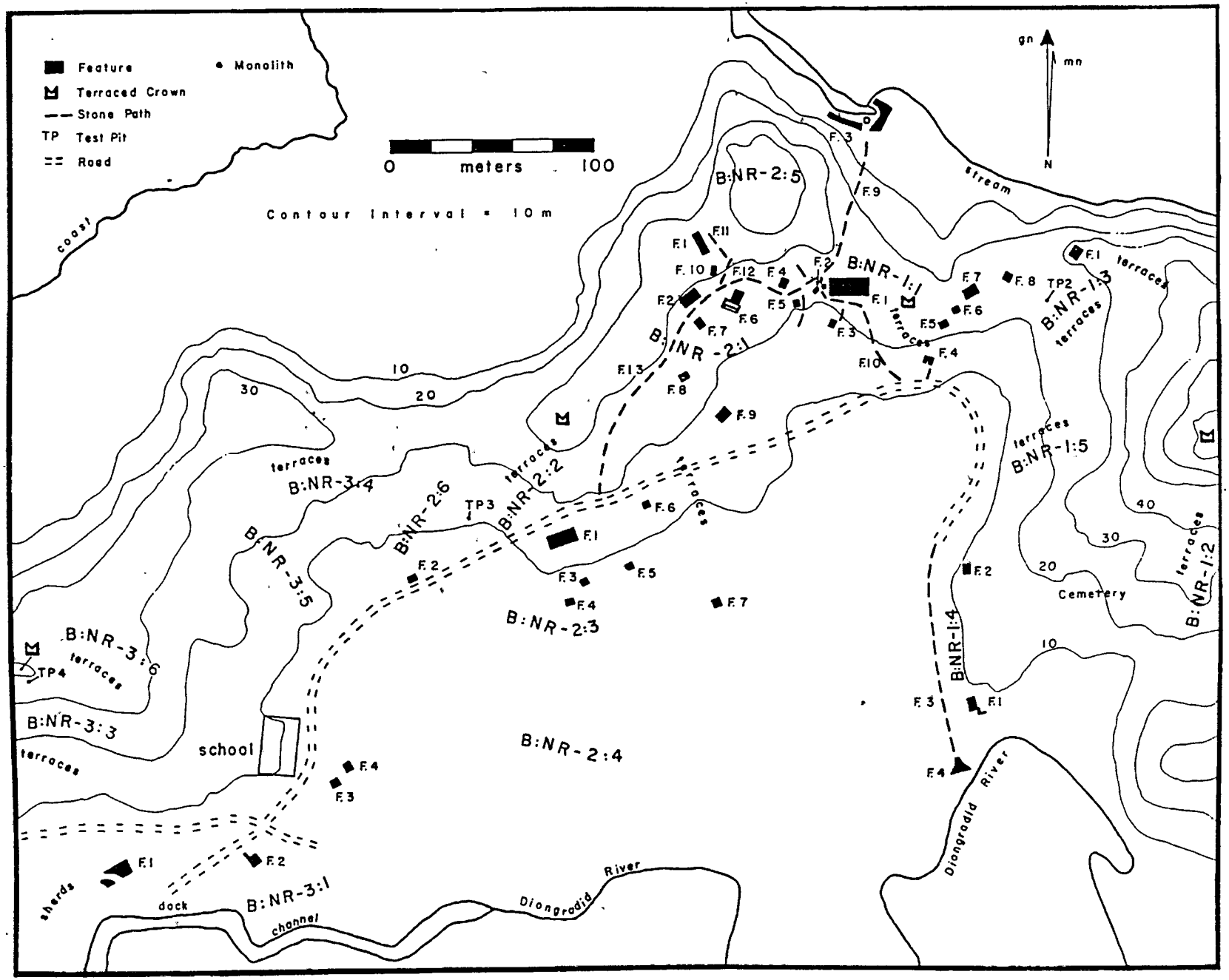

Figure 11. Map of features in the Ngardmau Villages along the Diongradid River.

TABLE 3

DESCRIPTION OF FEATURES MAPPED IN NGARDMAU VILLAGES

Site Number	Feature Number	Kind of Feature	Palauan Name* (if known)	Size (m long by m wide)	Comments
B:NR-1:1	1	platform	Bai ra Urdmau	42.0 x 21.0	chiefs' tables
	2	stone wall	-	-	
	3	platform	Blai ra Ngednoll	15.9 x 14.4	
	4	stone-lined well	Dioraikeam	-	
	5	platform	Blai ra Onguikl	9.3 x 6.0	
	6	platform	Blai ra Ngeruselelule	12.8 x 7.7	
	7	platform	Blai ra Omekang	17.3 x 9.0	
	8	rock pile	Blai ra Ngerebelas	-	destroyed
	9	stone path	-	-	
	10	stone path	-	-	
B:NR-1:3	1	platform	Bai ra Sirs	12.8 x 10.9	
B:NR-1:4	1	platform	Blai ra Mengekong	15.4 x 8.1	"L"-shaped wall
	2	platform	Blai ra Chemauadaob	7.5 x 6.3	
	3	stone path	-	6 m wide	
	4	platform	Diongradid	14 m wide	gateway
B:NR-2:1	1	platform	Bai ra Ilulk	27.3 x 9.8	
	2	platform	Bai ra Choldiang	30.0 x 13,9	
	3	coral stone dock	-	-	with monolith
	4	platform	Blai ra Bilud	14.5 x 8.6	two tiers
	5	platform	Blai ra Ngedesiil	8.2 x 6.7	
	6	platform	Blai ra Teblak	13.5 x 10.4	with stone apron
	7	platform	Blai ra Ngeribuk	10.6 x 6.2	

Table 3 (continued)

Site Number	Feature Number	Kind of Feature	Palauan Name* (if known)	Size (m long by m wide)	Comments
B:NR-2:1	8	platform	blai - name unknown	9.8 x 5.3	partially destroyed
	9	platform	Blai ra Ngerbachesis	12.5 x 6.4	
	10	platform	Blai ra Ibokoriong	11.0 x 9.0	
	11	stone path	-	-	
	12	stone path	-	-	
	13	stone path	-	-	
B:NR-2:3	1	platform	Kemangelbai	29.0 x 15.7	partially destroyed
	2	platform	Blai ra Chermall	12.8 x 6.6	
	3	platform	Blai ra Techelau	10.9 x 7.2	
	4	platform	Blai ra Ked	13.3 x 10.3	
	5	platform	Blai ra Bankur	11.4 x 8.3	
	6	platform	Blai ra Chelong	11.0 x 8.5	
	7	platform	Blai ra Tiou	8.7 x 6.5	partially destroyed
B:NR-3:1	1	platform	Bai ra Iuchei	24.9 x 11.8	partially destroyed
	2	platform	Blai ra Metemekang	12.8 x 7.8	with stone path
	3	platform	Blai ra Meltalt	12.6 x 7.2	
	4	platform	Blai ra Iuet	16.1 x 9.6	

* Bai is the Palauan word for meeting house, and blai is the Palauan word for house.

48), trenches, dug on the east and west sides of the hill. The path extends along the south face and then on southeast to the road. Near to where the path intersects the road is a stone-lined well called Dioraikeam (Fig. 11: B:NR-1:1, F. 4). This well was dug, according to the oral histories, during a time of drought.

B:NR-1:2 is the sherd covered terraces on the large hill east of the villages (Fig. 10). The hill is called Ngetilai. The terraces are described by Osborne (1966:215). There is a steep flight of terraces on the south face from the cemetery to the top of the hill and there are terraces on the east, north and northwest faces of the hill. There is a footcatcher across the terraces on the ridge east of the hill. The top has been slightly modified. It is built up on the east face with a slight depression. There are three or four terraces down from this crown on the east, north and northeast faces. The higher west side of the top is rocky and lacks terraces. The west face is forested, steep and not terraced. Large quantities of sherds were observed on the terraces. None were collected. Several World War II slit trenches criss-cross the terraces.

B:NR-1:3 is a terraced ridge that begins below the northwest face of Ngetilai Hill (B:NR-1:2) and extends around the west face of the hill nearly to the road (Figs. 10 and 11, Table 3). The upper terraces are steep and sharply cut and the lower terraces are low and sloping. A stone platform is on an upper terrace (Fig. 11: B:NR-1:3, F. 1). The platform is Bai ra Sirs. An informant stated that a path led from this platform northeast down the ridge to the remains of the traditional village of Beketei. This area was not surveyed. A shell midden was found on the lower terraces, and Test Pit 2 was placed in this shell midden. Sherds were found on the grassy terraces but none were collected.

B:NR-1:4 is an area with traditional village features south of the major village site, B:NR-1:1 (Figs. 10 and 11, Table 3). The site borders on the west with the taro fields, B:NR-2:4, and on the east with B:NR-1:2 and the cemetery. Several areas of stone paving were recorded. We were shown the location of where a traditional platform had been until it was

recently destroyed. The platform, Emechais, was about 50 meters north of B:NR-1:4, F. 2; it is not shown on Fig. 11. Also not shown on Fig. 11 is a stone feature located across the path from Odesonel ra Mengekong (Fig. 11: B:NR-1:4, F. 1). The feature appears to be a foundation for a World War II era house, but an informant stated that the Odesongel ra Ngerchelidue had been located there. The end of the pathway is the entrance to the villages at the river crossing. The area of stone paving is called Diongradid. At least one informant stated that the name Diongradid only applied to the crossing, but other informants used the name for both the crossing and the river. A few sherds were noted along the wide stone path that leads to the villages.

B:NR-1:5 is the terraces on a small Hill southwest of B:NR-1:2 (Figs. 10 and 11). The terraces are on the south face of the hill. The terraces are low and sloping. No sherds were found on the grassy terraces.

B:NR-1:6 is a terraced hillside (Fig. 10). The terraces ring the basin that stretches from the cemetery south of B:NR-1:2 east to the next ridge. The basin is shaped like a "U" with the opening to the south. The terraces are low and sloping. They are wide and extend along the edge of the basin for long distances. Sherds were observed in several scatters across the grassy terraces. A World War II tunnel was found in the ridge north of the center part of the site.

B:NR-1:7 is the terraced southern end of the long ridge that extends to the southwest from B:NR-1:8 (Fig. 10). The south end of the ridge is a bluff overlooking the river. There are two to three sharply cut terraces on the west, south and east faces of this bluff. A small area of stone paving, called an elud, was noted in the middle of the top of the bluff. Sherds were found on the terraces. No sherds nor terraces were observed on the ridge between B:NR-1:7 and B:NR-1:8.

B:NR-1:8 is a terraced hilltop east of the upper end of the "U" shaped basin of B:NR-1:6 (Fig. 10). A trail leads through the thin strip

of forest along the west side of the ridge and onto the grassy ridge north of B:NR-1:7. North of the trail is a small hill with three or four terraces and a squared top. A small area of stone paving, elud, was noted on the first terrace east of the crown. Sherds were found on the terraces and across the top. Several Japanese World War II trenches were also observed on the terraces and ringing the top.

B:NR-1:9 is a long terraced ridge extending south from the hillside below the terracing on B:NR-1:8 (Fig. 10). The terracing parallels the length of the ridge and is long and narrow, and not steeply cut. Scatters of sherds were noted across the barren terraces. The sherds appear to include a higher percentage of thin, black sherds than observed in the sites to the west. Many World War II trenches and foxholes were also noted.

B:NR-1:10 is a scatter of sherds at the base of the main east-west ridge which defines the northern extent of the drainage for the river, and on the northern part of the basin east of B:NR-1:9 (Fig. 10). The face of the ridge is very steep. Sherds were found on the face of the ridge and out onto the flat savanna at the bottom of the ridge.

B:NR-1:11 is a terraced hill along the ridge east of B:NR-1:9 and south of B:NR-1:10 (Fig. 10). The hill is a small bump in the middle of a ridge that extends south from the main ridge. A few sherds were found on the grassy terraces, and also at the base of west facing terraced hillside in the wooded ravine that separates this ridge from B:NR-1:9.

B:NR-1:12 is a scatter of sherds at the south end of the ridge that extends from the first high hill east of the villages, Ongekikl rar Dioll, to the gaging station (Fig. 10). The sherds are scattered thinly across the large flat area at the south end of the ridge above the steep bluffs that overlook the river. The scatter of sherds extends out onto the gentle slope west of the ridge. A small pit, apparently dug by soil scientists, showed that the top soil is thin with no evidence of cultural materials.

B:NR-1:13 is a small scatter of sherds on the middle of the ridge between Ongekikl rar Dioll and the gaging station (Fig. 10). The thin scatter of sherds was discovered while inspecting ground disturbed by pig rutting in the wooded ravine east of the ridge. The site is north of the small hill in the middle of the ridge. A few sherds and several pieces of chert were found on the barren ground.

B:NR-1:14 is a long terraced ridge which extends north from a small crown on the top of Ongekikl rar Dioll (Fig. 10). A few sherds were noted on the crown; the terraces were not included in the survey.

B:NR-IF-1:1 is a single sherd found along the edge of the river just upstream from the gaging station (Fig. 10). The sherd is thick with a dark gray brown color. The sherd appears to have been redeposited along the stream.

Ngerutoi Village Area

B:NR-2:1 is the traditional village of Ngerutoi (Figs. 10 and 11, Table 3). The remains include many areas of stone paving, pathways, and a coral stone dock with a carved monolith. The dock is at the head of the old channel through the mangroves north of the villages. The remains of the old pier north of the mouth of the channel, Nglas, were pointed out to the surveyors but not visited. The dock is made from coral rubble and was partially destroyed during the Japanese administration. A carved monolith is at the head of the channel on the dock (Fig. 11: B:NR-2:1, F. 2). The volcanic stone is about 90 centimeters high and there are two faces, one carved on each side (Fig. 12). The name of the stone is Ngchedub ra Ielch, which means "recognizing the chief." The oral histories relate that the stone is part of the ceremonies in the initiation of a chief. A stone path leads up the east side of Roisbeketei to the cluster of features on the south face of the hill. Numerous scatters of sherds were noted among the features.

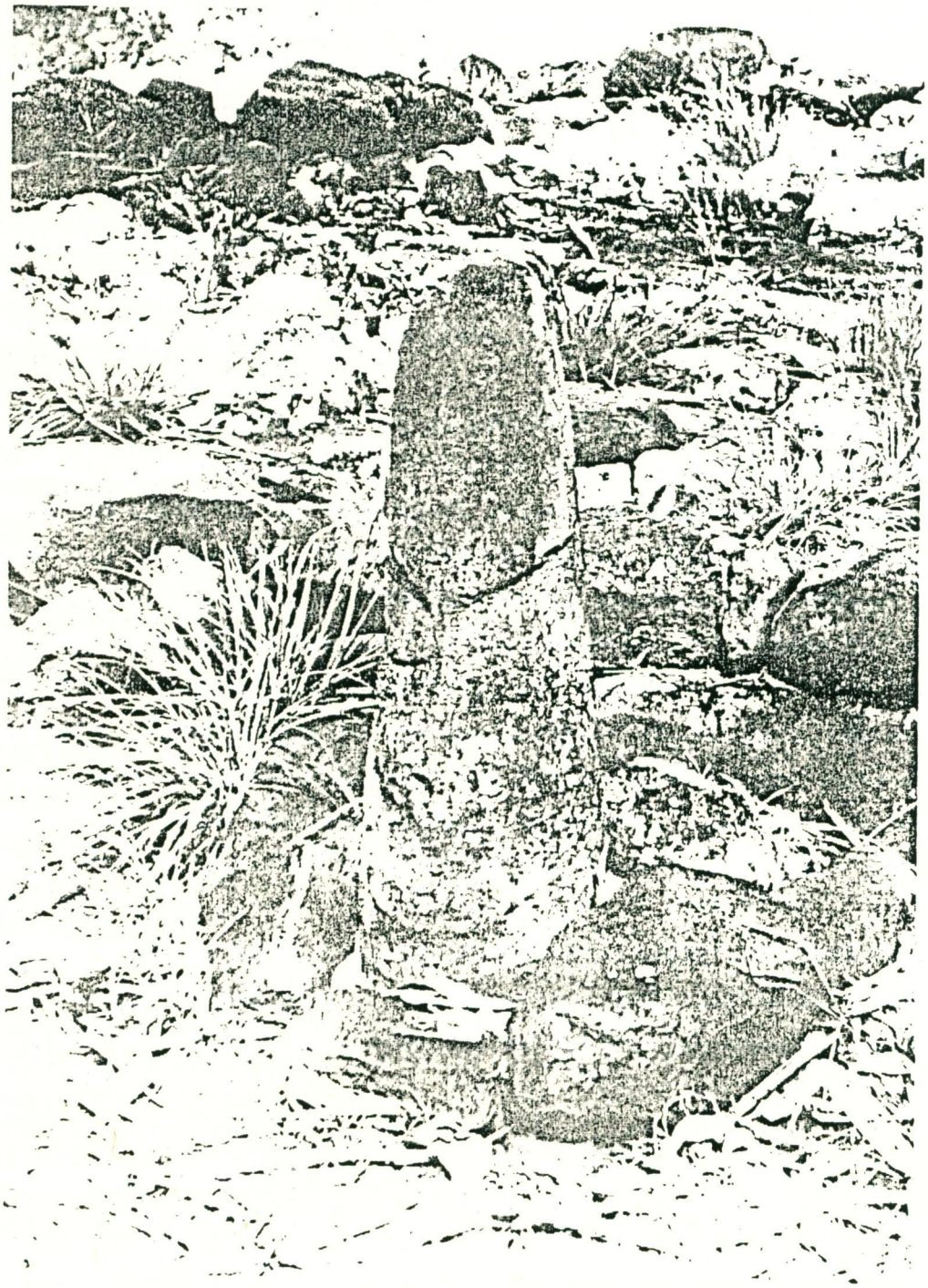

Figure 12. Carved monolith at B:NR-2:1, F. 3; Ngchedub ra Ielch (compass at base is 5 cm x 10 cm).

B:NR-2:2 is a terraced hill with a squared top (Figs. 10 and 11). The terraces are on the west end of a short ridge that connects to Roisbeketei. The crown and terraces are step and sharply cut on the west face of the ridge. There are also terraces on the south and north sides of the ridge at the west end. A shell midden was found on the lower part of the west face. The midden appears to be eroding out from under a terrace. The terraces are those described by Osborne (1966:215) as the location from which he collected a sample of sherds. The terraces are covered with grass or with garden plots.

B:NR-2:3 is a second cluster of areas of stone paving in the traditional village of Ngerutoi (Figs. 10 and 11, Table 3). The features lie primarily south of the road built during the Japanese administration. The site includes several areas of stone paving, scatters of sherds, and an area of terracing on the hillside east of the Municipal (State) Office. The terraces are low and sloping. Below the Municipal Office is the remains of the large bai platform (Fig. 11: B:NR-2:3, F.1). The platform was partially destroyed during the construction of the road. We were shown the location where a platform had stood before it was destroyed in the 1940s. The house platform, Ikesuk, was about 25 meters east of the Chermall platform, B:NR-2:3, F.2; it is not shown on Fig. 11.

B:NR-2:4 is the large area of taro gardens along the north side of the river (Figs. 10 and 11). The gardens are primarily located south of B:NR-2:3 but they extend from B:NR-3:1 on the west to B:NR-1:4 on the east.

Ngetbong Village Area

B:NR-3:1 is the traditional village of Ngetbong (Figs. 10 and 11, Table 3). The remains include many areas of stone paving. The features extend from south of the school across to the modern dock. We were told that the traditional dock was located where the modern dock is now. The bai platform, Fig. 11: B:NR-3:1, F.1, was partially destroyed during the Japanese administration. Large numbers of sherds were noted in several

scatters throughout the site. The scatter of sherds west of the west end of the modern dock is particularly notable for the high density and large quantity of sherds visible on the surface in the tapioca garden.

B:NR-3:2 is a terraced hillside on the south face of the ridge that extends from Telong Hill to the east (Figs. 10 and 11). Sherds were found in several scatters on the low, sloping ridge along the north side of the road to the dock. The grassy terraces are in the middle of the ridge; no terraces were observed on Telong Hill.

B:NR-3:3 is a terraced hill in the middle of the ridge that extends east from Telong Hill (Figs. 10 and 11). The top of the small hill is squared to form a small crown. There is a small area of stone paving on the top of the hill, an elud. Large numbers of sherds were found on the grassy terraces. The terraces are steep and sharply cut. The south facing ridge extends to the school yard. Test Pit 4 was placed on the first terrace down from the top toward the school. The crown is cut by a World War II slit trench.

B:NR-3:4 is a terraced hillside (Figs. 10 and 11). The terraces are on the south face of the ridge between B:NR-3:3 and the gap between Ngetbong and Ngerutoi Villages. The terraces are low and sloping. The gap and the north face of the ridge are forested. Sherds were observed on the grassy terraces.

Ngertuker Village Area

B:NR-4:1 is a scatter of sherds on the top of Mekirong Hill (Fig. 10). Mekirong Hill is a high (150+ meters), barren hill along the main east-west ridge. It is the hill overlooking the waterfall. The thin scatter of sherds observed consists almost exclusively of thin, black sherds. Several pieces of chert were also found. A number of World War II trenches and foxholes have been dug into the top of the hill. As always, numerous aircraft gun shell casings were noted on the barren ground.

B:NR-4:2 is a thin scatter of sherds on the gentle, barren slope at the base of the steep face of the ridge below B:NR-4:1 (Fig. 10). B:NR-4:2 is on the south side of Mekirong Hill. The thin scatter of sherds may be redeposited from the site on the top of the hill (B:NR-4:1).

Ngerchetang Village Area

B:NR-5:1 is a terraced hill south of the river from the villages of Ngardman (Fig. 10). The hill is named Ked ra Temekai. At the top of the hill is a crown with a deep, squared basin sunk into the top. This basin is deeper and more squared than other basins in crowns which have been observed by this author. It is not known if this basin is traditional or modern. The hill has been extensively modified by World War II trenches and tunnels, and nearly half of the hill has been removed as a part of the mining operation. The north half of the hill has been cut away. At the base of this cut is the washing operation for the bauxite (see B:NR-5:6). A few sherds were found on the terraces on the remaining west, north and east faces of the hill. To the south the hill becomes part of the ridge.

B:NR-5:2 is a terraced hillside (Fig. 10). A narrow northeast face of the ridge east of B:NR-5:1 is terraced with low sloping terraces. A few sherds were found on the grassy terraces.

B:NR-5:3 is a small set of terraces on the second hill south along the ridge from B:NR-5:1 (Fig. 10). The barren hill is a small bump along the ridge with two or three low sloping terraces descending from the top. The top of the hill is not modified. The hill has been extensively modified by World War II fortifications. A few sherds were found on the terraces on the barren hillside.

B:NR-IF-5:1 is a single sherd found on the barren hillside above the modern dam that supplies the water for the villages (Fig. 10). The sherd is a thin, black sherd with a white coating on the inner surface.

B:NR-IF-5:2 is a single rim sherd found on the edge of the large flat plane south of the river crossing (Fig. 10). The sherd is of medium thickness with a red-brown color.

The letter "A" shows general location of a cave in the steep cliffs across from and south of the waterfall (Fig. 10). The cave was searched for but not found during the survey. The cave is, according to the oral histories, a place where travelers and invaders stayed on the way to the villages of Ngardmau from Melekeok and Ngchesar.

Review of the Historic Period

The historic Period is the last two centuries; dating from 1783 and the shipwreck of the Antelope. In 1783 the Ibedul of Koror obtained guns from the English and used this power to consolidate the alliances of villages under him. He was also able to begin expanding his empire.

At this time Ngardmau was apparently an area with numerous loosely allied villages all of which were independent of Koror. The people of this area offered some resistance to the expansion exerted by Koror thus beginning a period of antagonism. At some time in the first part of the 1800s the Ibedul became angered by some acts of violence caused by some of the people from the villages in Ngardmau. He ordered an all out war. In the oral histories this war with Koror was the last in a string of defeats suffered by the people of Ngardmau. The defeat was total, the people scattered and the villages abandoned. There is little mention of Ngardmau in the accounts of the traders in the 1800s. People began returning to three of the villages in the later part of the 1800s and the German ethnographers record a few people in the three villages of Ngetbong, Ngerutoi and Urdmau. These three villages are still the only villages inhabited in Ngardmau.

In the 1930s the Japanese became interested in the bauxite deposits in Ngardmau. The first mine began operations in 1940. The deposits were strip mined and transported by rail to a terminal on the hill south of the

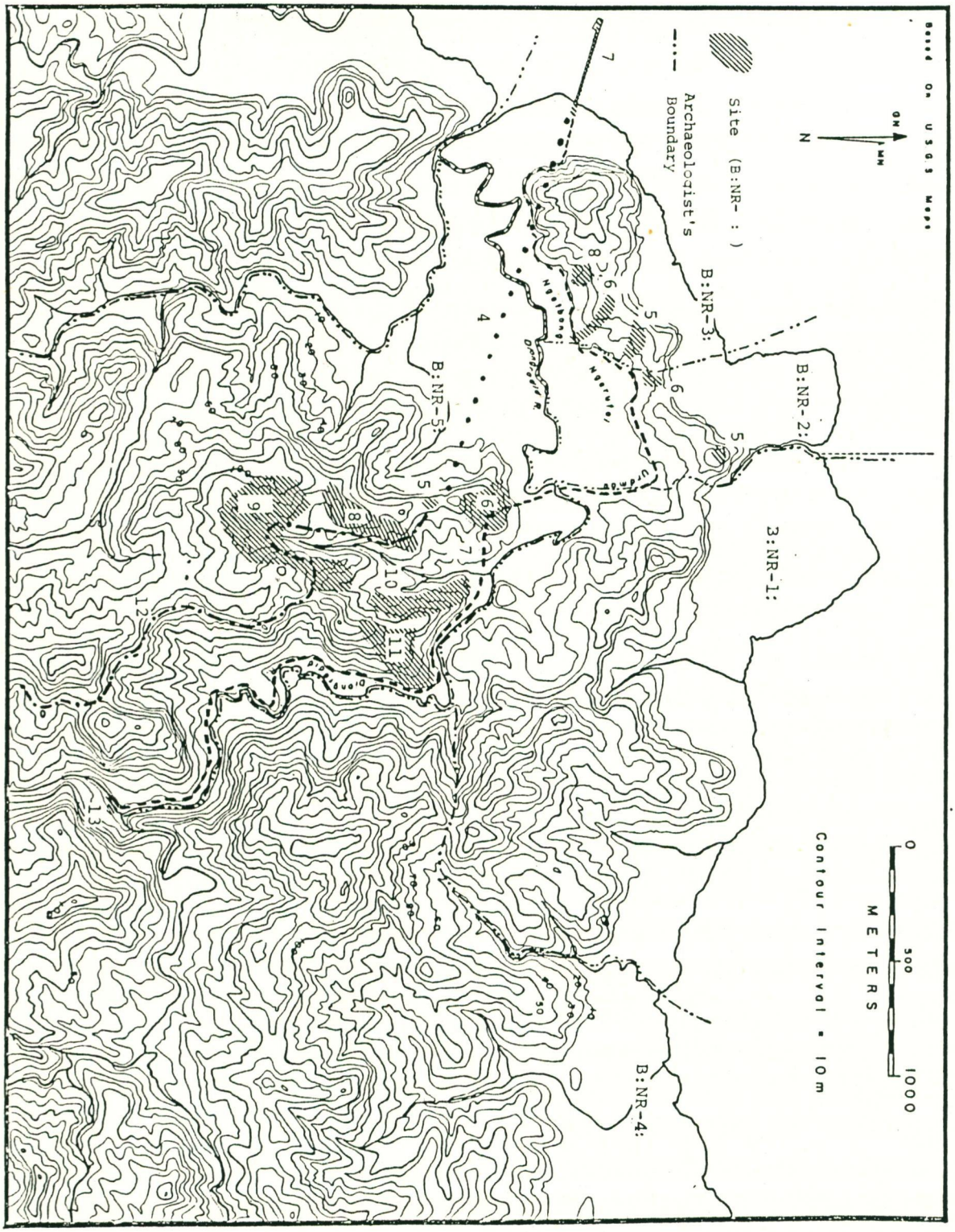

Figure 13. Historical sites identified in Ngardmau.

villages. The deposits were washed to concentrate the ore and then transported by gondola cars on a tramway across the mangroves to the new dock built by the Japanese for loading the ore onto ships. Also, the operations included a large water system for piping water from a series of dams located near the waterfall to the washing area and to the dock for supplying water to ships. The mining and water system operations were large and involved vast areas. The strip mines, there were six or seven mines, cover many hectares of land on the south side of the river. The terraces cut during the mining still remain as bare scars nearly unchanged in the last 40 years.

Ngerutoi Village Area

B:NR-2:5 is an area with a large number of tunnels and slit trenches on Roisbeketei (Figs. 11 and 13). The tunnels are typically "U" shaped. The fortifications were dug during World War II.

B:NR-2:6 is an area with several concrete foundations (Figs. 11 and 13). The foundations are on the west and north sides of a terraced hill (see B:NR-2:2). The foundations were part of the housing for the workers in the bauxite mines and were built in the 1940s.

Ngetbong Village Area

B:NR-3:5 is an area with several concrete foundations (Figs. 11 and 13). The cluster of foundations is similar to B:NR-2:6 but located across the gap on a south facing hillside. The foundations were built in 1940s for housing for the workers in the bauxite mines.

B:NR-3:6 is an area with several concrete foundations (Figs. 11 and 13). The foundations were noted beginning near the road east of the school and extended up the hillside to the ridge east of Imii Hill (see B:NR-3:3). The foundations are from the residences for the workers in the bauxite mines. Also on the ridge just east of B:NR-3:3 is a very large cubical concrete basin. The structure was dug into the ridge and is

accessed through small openings in the top. The chamber is about 5 meters long by 4 meters wide by 4 meters deep.

B:NR-3:7 is Ucherael Dock and the road into the villages (Fig. 13). The dock was constructed as a shipping facility to load the bauxite ore. On the end of the dock is the three story remains of the loading tower (Fig. 14). To the north of the tower is a breakwater with the large pipes which carried water from the dams (see B:NR-5:7 and B:NR-5:13) to the dock. A concrete foundation lies just inland from the shore end of the dock and a second foundation was noted at the juncture of the road to the dock with the road through the villages.

B:NR-3:8 is an area on the south side of the ridge between B:NR-3:2 and B:NR-3:3 with concrete foundations (Fig. 13). The foundations are for the residences of the workers in the bauxite mines during the 1940s. It appears that there was some bulldozing around the area for the foundations, but it may have been that the area was terraced prior to the bulldoging.

Ngerchetang Village Area

B:NR-5:4 is the series of pylons that supported the wires for the gondola cars which carried the concentrated bauxite ore from Ked ra Temekai across the mangroves to the loading tower on the dock (Figs. 9 and 13). Most of the pylons are still standing though badly rusted. A rough eyeball estimate of the height of the pylons is about 8 meters.

B:NR-5:5 is the area of concrete foundations on the ridge south of Ked ra Temekai where the concentrated bauxite ore was loaded onto the gondola cars (Fig. 13).

B:NR-5:6 is the area of concrete washing pools at the base of the cut on the north side of Ked ra Temekai (Fig. 13). The washing pools were used to concentrate the bauxite ore. The pools are very large: there are two pools each is about 15 meters by 10 meters by 3 meters deep. Each

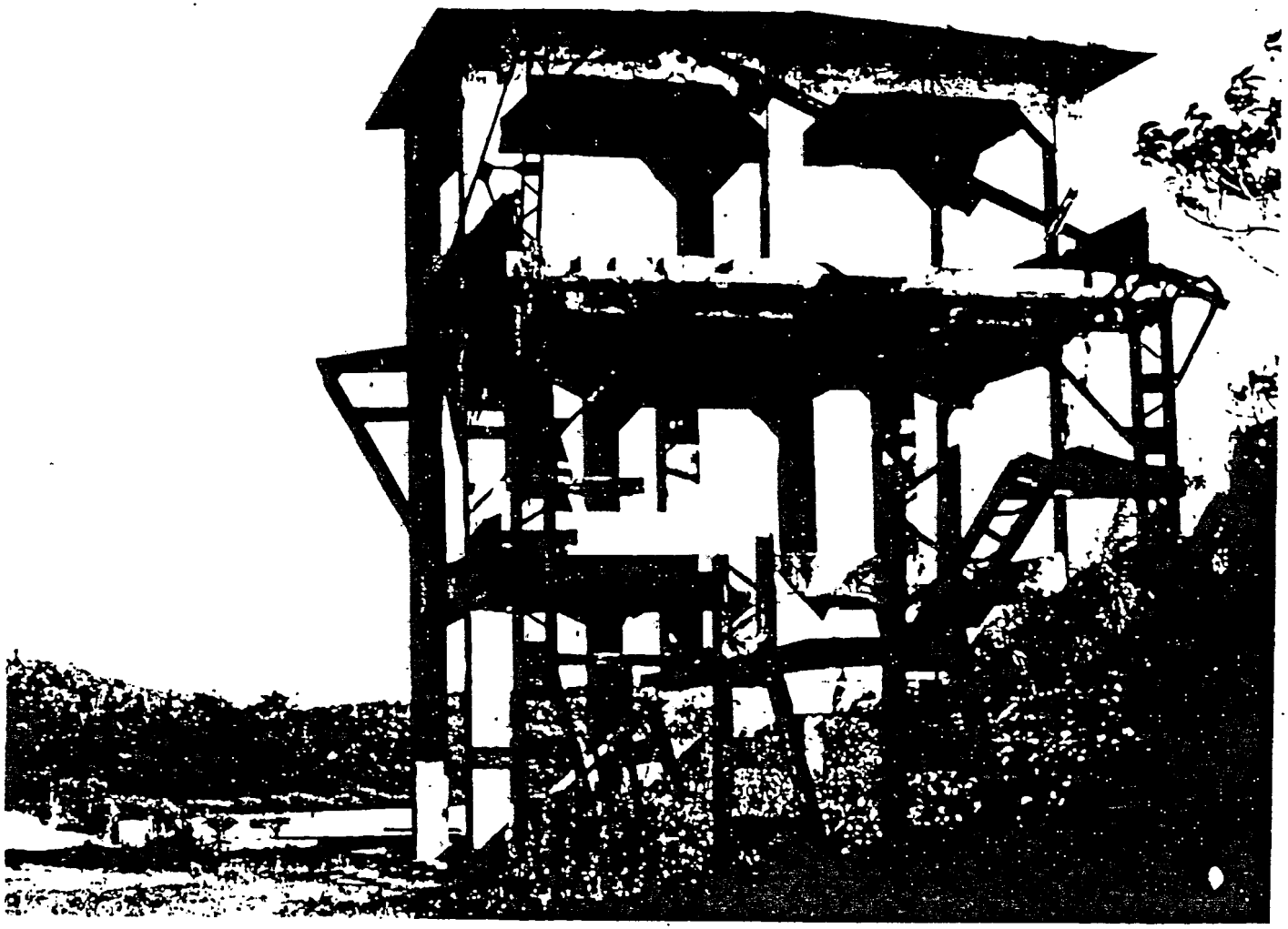

Figure 14. Terminal on Ucherael dock, B:NR-3:7, for loading bauxite ore onto ships.

pool is partitioned with concrete walls to circulate the water through the pool. There are several smaller concrete foundations around the pools and the rusting remains of some of the equipment used in the operation.

B:NR-5:7 is the remains of the system of pipes used to bring water from the dams (see B:NR-5:13) to the washing operation, village and to the boats out by the dock (see B:NR-3:7) (Fig. 13). The remains are the trenches where the pipes used to be in the road bed which was constructed for laying the pipes. The 12" pipes (30 cm) can still be found throughout Babeldaob Island where they serve as bridges and many other functions.

B:NR-5:8, B:NR-5:9, B:NR-5:10, and B:NR-5:11 are four areas of strip mining (Fig. 13). The scars left by the strip mining are virtually unchanged since the 1940s (Fig. 7). The stip mining was done by cutting the bauxite rich soil off in terraces from the steep hillsides. There are several more areas of strip mines south of the area surveyed. Several wrecks of the equipment used in the mining were observed on the sites.

B:NR-5:12 is the narrow gauge railroad used to haul the ore to the concentrating operation (see B:NR-5:6, B:NR-5:5 and B:NR-5:4) (Figs. 13 and 15). The two tracks of the railroad are of slightly different size; the tracks, ties and road bed are still in good condition. In some places the tracks and ties have been removed.

B:NR-5:13 is the series of dams on the river above the falls (Fig. 13). The dams have been broken up and are no longer usable. The dams fed the water into the system of pipes to be transported downstream (see B:NR-5:7, B:NR-5:6 and B:NR-3:7). The branch of the river on which the dams is located contains several low rapids and appears to be a larger branch than the branch of the river coming over the falls.

Test Pits

Four test pits were dug during the survey. The test pits were dug in B:NR-1:9, B:NR-1:3, B:NR-2:2, and B:NR-3:3. The pits were 50 cm x 50 cm

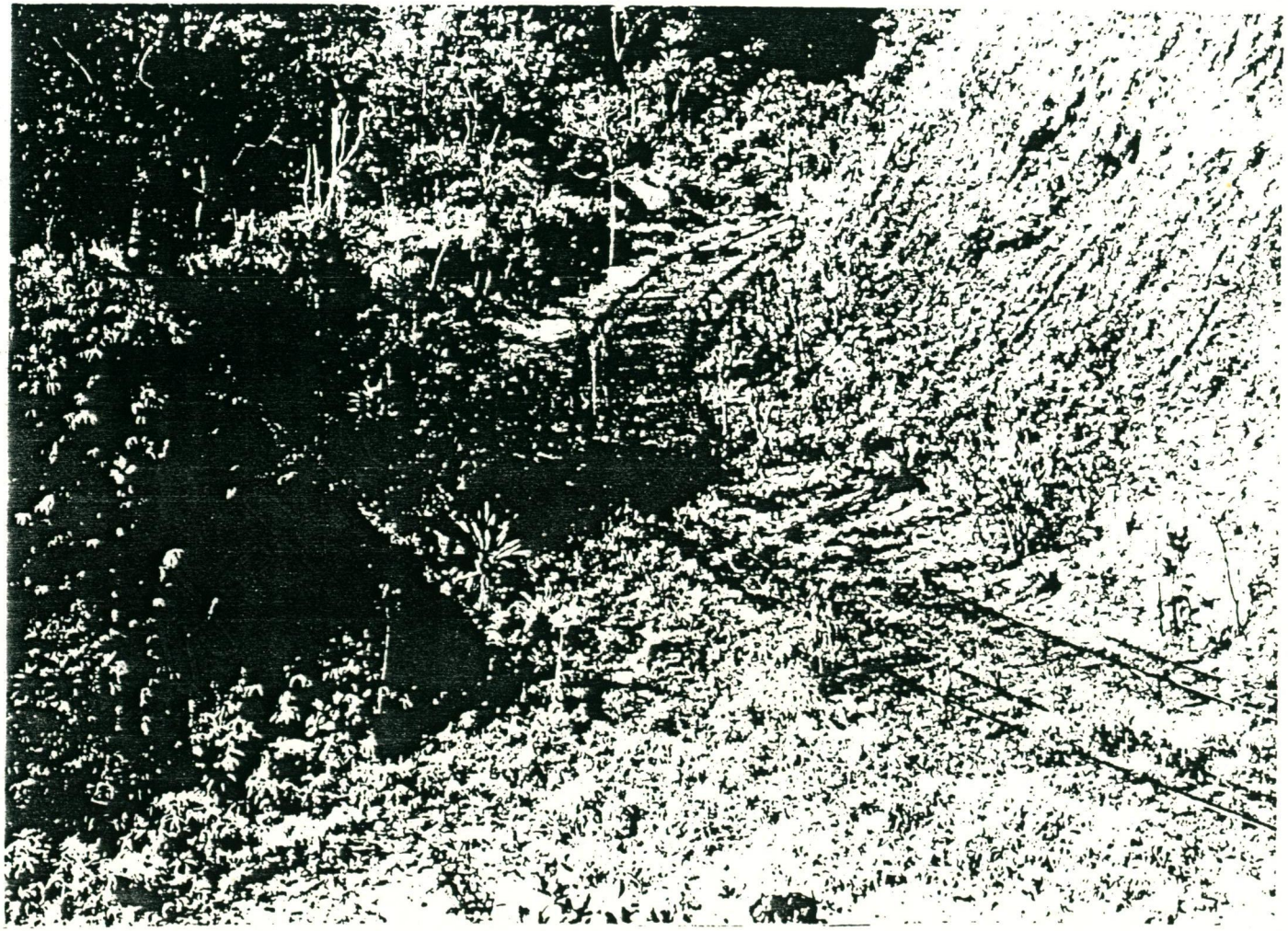

Figure 15. The two tracks of the narrow gauge railroad, B:NR-5:12, used to haul bauxite ore from the strip mines to the processing plant.

and ranged in depth from 25 cm to 50 cm. The artifacts recovered from the excavations included sherds, shell, bone, chert and charcoal. It is anticipated that shell from B:NR-2:2 will be submitted for radiocarbon dating.

Test Pit 1 is located in B:NR-1:9 in the middle of the long terraced ridge which runs the length of the site. The Test Pit is a few meters west of a long slit trench, but well away from the disturbance. Test Pit 1 is in an area with loose, friable top soil. No sherds were visible on the surface in the immediate vicinity of the Test Pit. In the top 15 cm the soil is light brown (10YR 5/4 yellowish brown), friable, with few rocks and no artifacts. At a depth of 15 cm sherds are first encountered in a dark brown (2.5YR 4/4 dark brown), blocky, silty soil with some rocks. The sherds are thin, black sherds. From 25 cm to 40 cm the soil is harder with many rocks. There are fewer sherds than from 15 cm to 25 cm. The sherds from 25 cm to 40 cm are both thin, black sherds and red exterior/black interior, medium-thick sherds. From 40 cm to 50 cm the soil is more clayey with large rocks and a few sherds. At 50 cm the excavations were halted. No color change was observed below 15 cm in the very dry soil.

Test Pit 2 is located in B:NR-1:3 in a shell midden found on the surface of the riser of a terrace. The shell midden is about half way down the southwest facing hillslope, between the ridge and the road (Fig. 11). The est Pit is on a steep slope (about 35° from horizontal) and measurements were taken from the surface, not from the level. On the surface, and extending to a depth of 8 cm to 10 cm is a deposit of shells with a few sherds in a dark gray-brown (10YR 3/1 very dark gray) humic soil. From 8 cm to 25 cm is a brown (7.5YR 4/4 brown) silty soil with small rocks and sherds. The cultural deposits continued beneath the bottom of the excavations at 25 cm. The sherds are generally medium-thick, brown sherds.

Test Pit 3 is located in B:NR-2:2 on the lower slopes of a terraced hillslope (Fig. 11). The Test Pit is located on a terrace riser behind a

garden patch (Fig. 16). The garden is behind the house north of the house with the store along the road west of the Municipal (State) Office. The shell midden is eroding out from the riser. It appears that the terrace was built on the shell midden and subsequently the soil has been peeled off from the riser during gardening exposing the shell midden. Numerous bits of shell were noted in the garden patch. There is an area of concrete foundations build during the 1940s about 50 meters north and northeast of here and the construction of these structures involved earthmoving, but it does not appear that there was any earthmoving around the shell midden. The elderly couple who live in the nearby house and do the gardening said that they remember the shell as always being there. The Test Pit was placed so that the top part cut into the terrace riser above the shell midden. The slope of the riser is about 40° from the horizontal. The levels of the Test Pit were dug from the horizontal. Measurements for the profile were taken from the inside wall. The top 5 cm is a brown (7.5YR 4/4 brown), silty soil containing sherds. The shell midden is a lens 25 cm thick. Numerous fragments of shell and bone were recovered. The entire contents of a 10 cm level were bagged for specialized analysis. There is no soil in the lens, there are few sherds in the lens. Beneath the shell midden, from 30 cm to the bottom of the excavations at 40 cm is a reddish brown (5YR 4/3 reddish brown), silty, blocky soil with bits of rocks, and sherds. The soil beneath the lens appears to be a terrace fill as there are bits of soil of different colors mixed into the soil. A variety of different kinds of sherds were recovered from the layers of soil. The shell midden does not rest on a B or C horizon soil, but appears to be part of a terrace fill. Shell from Test Pit 3 are being processed to be sent out for radiocarbon dating.

Test Pit 4 is located in B:NR-3:3 on the south side of the small crown on Imii Hill. The Test Pit is located on a terraced ridge that extends from the crown to the school; the Test Pit is on the first terrace down from the top (Fig. 11). A large number of sherds were observed covering the crown and the two terraces below the crown. The sherds displayed an amazing variety in shapes and colors. The top 10 cm of the Test Pit is a brown (7.5YR 4/4 brown), blocky, silty soil containing a

Figure 16. Vince Blaiyok pointing to the shell midden at the base of a terrace riser in B:NR-2:2 before excavation of Test Pit 3, William Kumangai is to the far left.

variety of sherds. From 10 cm to 25 cm is a dark brown (7.5 YR 3/4 dark brown), friable soil with flecks of charcoal and different colored soils, little pieces of rocks and small rocks. No charcoal was collected. The soil appears to be a terrace fill. From 25 cm to 40 cm, the bottom of the excavations, is a brown (7.5YR 5/4 brown), blocky, hardpacked soil with a few sherds. Most of the sherds in the bottom 15 cm are thin, black sherds.

NGCHESAR STATE

Background

Ngchesar State is in the southeast corner of Babeldaob Island (Figs. 2 and 3). The major river in this area is the Ngerdorch. The Ngerdorch River cuts through the ridge which parallels the east coast. The river cuts inland for about 1 kilometer before turning north. It continues north to its source in Lake Ngerdolk in Melekeok State. The river has several tributaries that extend to the center of Babeldaob Island. The watershed is one of the largest in Palau.

The valleys of the Ngerdorch drainage are low and broad (Fig. 17). Although the walls of the valleys do not rise to great heights they are generally steep. There are large tracts of forest both in the valley bottoms and on the ridges (Figs. 18, 19 and 20). Table 4 lists the plants recorded in two transects; one south of the river and the other north of the river. The last kilometer of the river flows through the mangroves and the water is brackish for all of this distance. Above the mangroves for the next kilometer or so the river is broad with a soft bottom. It would be difficult to wade across the river at any point below Simizu.

Fig. 21 presents the place names recorded for Ngchesar. Fig. 22 shows the route followed by the surveyors. As in Ngardmau, the dashed line shows the 15 meters to 20 meters width of the surface observed during the survey. The survey covered only a small fraction of the surface in the area.

Oral Histories

According to the oral histories the area south of the Ngerdorch River all the way to Airai was Bungelkelau (Fig. 23). At that time a powerful village, Ngemingel, was warring against Ngerngesang. The chief of Ngerngesang asked the people of Bungelkelau (note: not Ngersuul) to help defeat Ngemingel. The people of Bungelkelau attacked and defeated

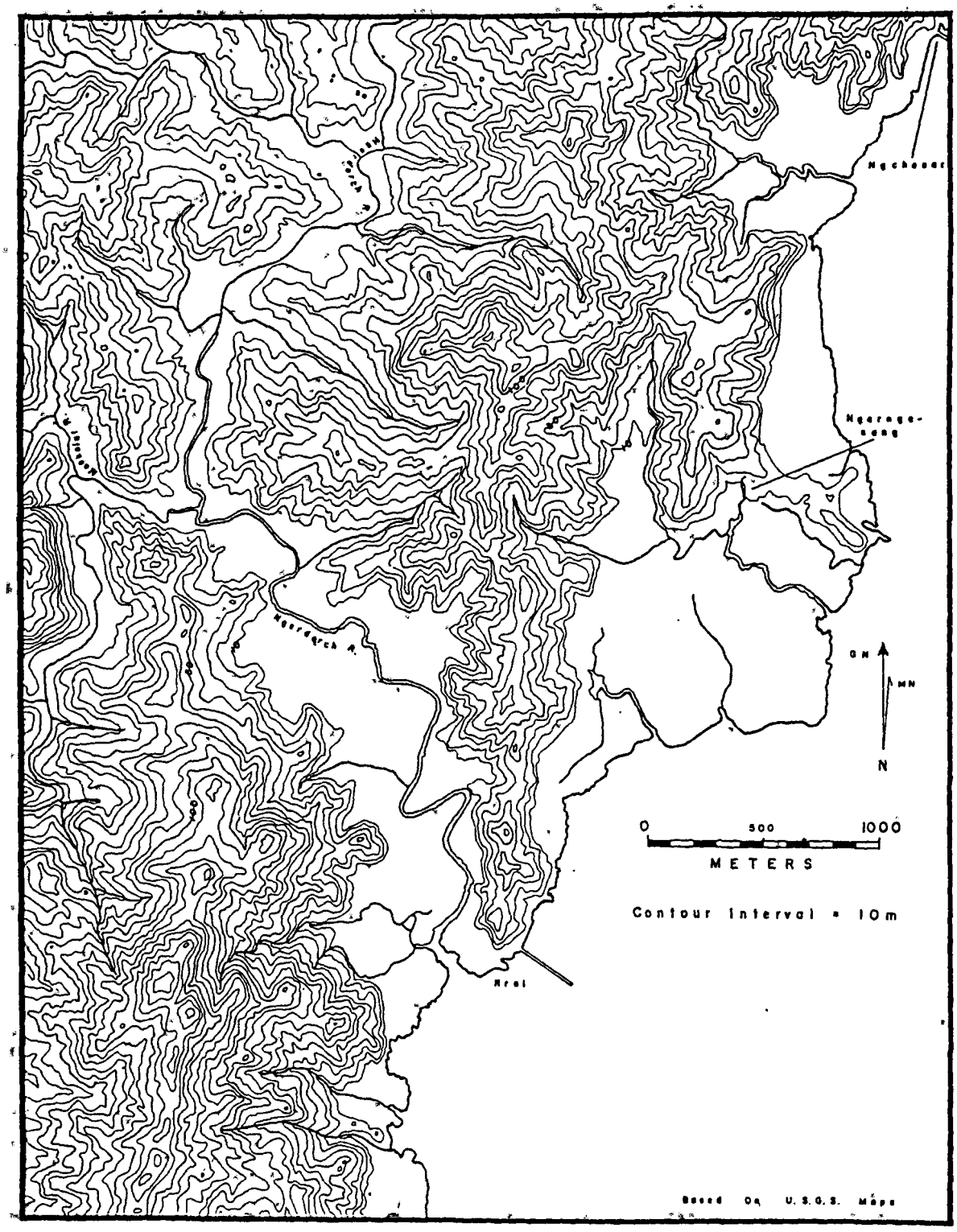

Figure 17. Contour map of the area of the survey in Ngchesar.

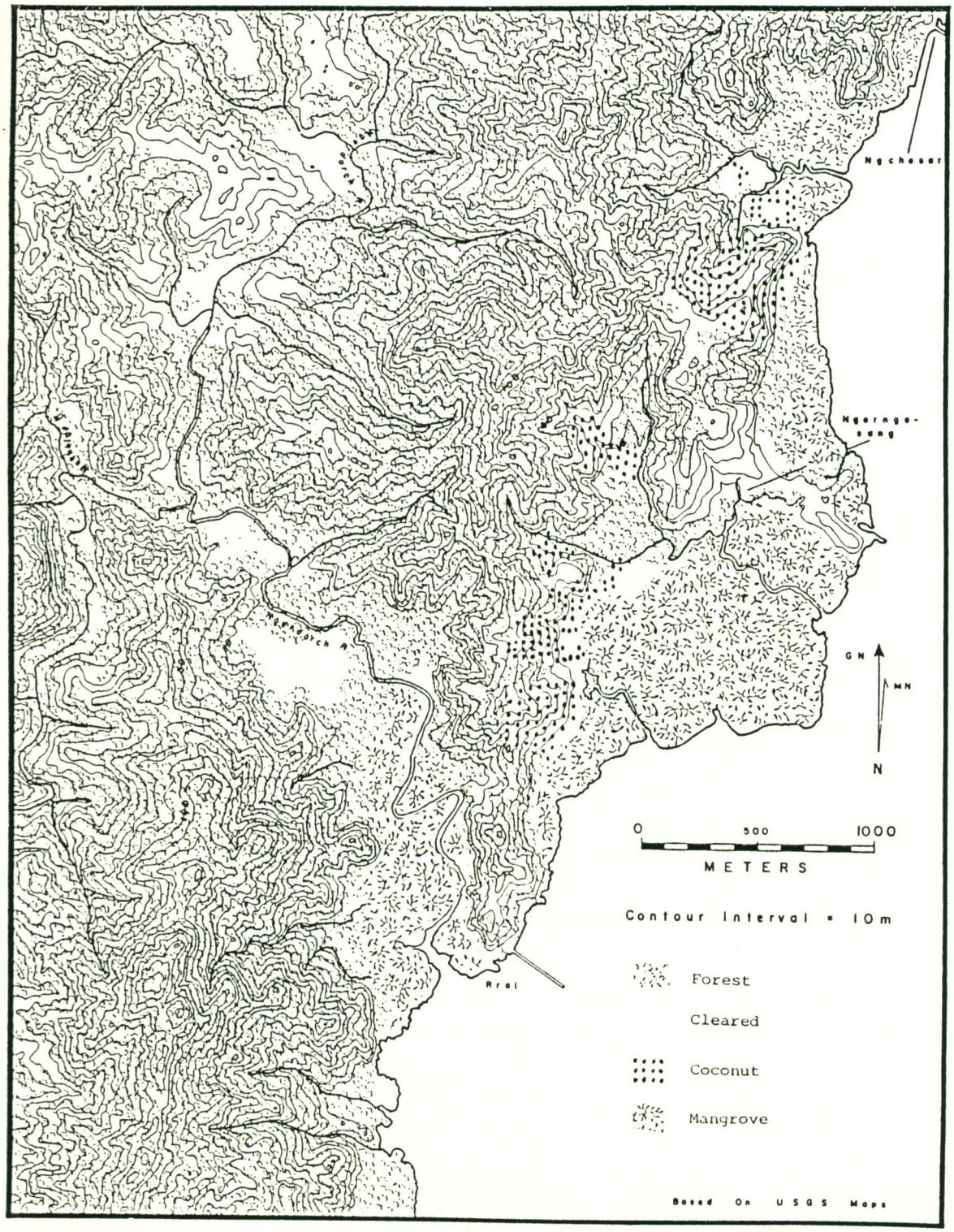

Figure 18. General vegetation map for the area of the survey in Ngchesar.

TABLE 4

PLANTS COMMONLY SEEN IN TWO TRANSECTS IN NGCHESAR

1. South of the Ngerdorch River on the hill around B:NC-1:3, F. 1.

Palauan Name	Scientific Name* (if known)	Common Name* (if known)
Las	*LEGUMINOSAE Pterocarpus indicus*	Nara
Ukall	*LEGUMINOSAE Serianthes kanehirae*	
Kelelecharm	*ANACARDIACEAE Campnosperma brevipetiolata*	
Cheues	*ANACARDIACEAE Rhus taetensis*	
Tonget	*ANACARDIACEAE Semecarpus venenosa*	
Chebouch	*PALMAE Pinanga insignis*	
Demailei	*PALMAE Heterospathe elata*	Palme Brava
Btaches	*GUTTIFERAE Calophyllum inophyllum*	Alexandrian Laurel
Titimel	*ANACARDIACEAE Spondias pinnata*	Amra
Chelsau	*TILIACEAE Trichnospermum ledermannii*	
Temring	*MARANTACEAE Donax canniformis*	Donax
Such		
Sis	*LILIACEAE Cordyline fruticosa*	Ti Plant
Kesuk	*EUPHORBIACEAE Codiaeum variegatum*	Croton
Bedel	*EUPHORBIACEAE Macaranga carolinensis*	Macaranga
Iuetekill		
Tochedulik	*LEGUMINOSAE Caesalpinia* sp.	Cat's Claw
Meduu	*MORACEAE Arocarpus communis*	Breadfruit
Lius	*PALMAE Cocos nucifera*	Coconut Palm
Kesiamel	*ARALIACEAE Boerlagiodendron pulcherrimum*	
Tuuarekiuid	*ZINGIBERACEAE Alpinia babeldoobensis*	
Miich	*COMBRETACEAE Terminalia samoensis*	Tropical Almond
Buuch	*PALMAE Areca catechu*	Betelnut Palm

Table 4 (continued)

2. North of the Ngerdorch River on the ridge around B:NC-2:3 .

Palauan Name	Scientific Name* (if known)	Common Name* (if known)
Chertochet	*PANDANACEAE Pandanus aimiriikensis*	Pandanus
Chersachl	*MYRISTICAECEAE Horsfieldia palauensis*	
Kerdeu	*RUBIACEAE Ixora* sp.	Ixora
Imekurs	*OXALIDACEAE Averrhoa bilimbi*	Bilimbi
Bkau	*ROSACEAE Parinarum palauense*	
Chedebsungl	*CAPPARIDACEAE Crataem speciosa*	
Cheremall	*MALVACEAE Hibiscus tiliaceus*	Hau
Riamel	*FLACOURTIACEAE Pangium edul*	Pangi; Payan
Keam	*LEGUMINOSAE Inocarpus fagiferus*	Tahitian Chestnut
Bambuu	*GRAMINEAE Bambusa vulgaris*	Common Bamboo
Iedel	*ANACARDIACEAE Mangifera indica*	Mango
Sui	*ZINGIBERACEAE Alpine pubiflora*	
Tebudel	*THYMELAEACEAE Wikstroemia elliptica*	
Siselianged**	*LILIACEAE Cordyline fruticosa*	Ti Plant
Ngolem	*EUPHORBIACEAE Glochidion* sp.	Glochidion
Lulk	*MORACEAE Ficus microcarpa*	Banyan

(Tonget was observed commonly in the area, but not in the transect)

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* Based on Guide List of Plants of The Palau Islands, Demei O. Otobed, Chief Entomologist, 1977.

** Identified as a medicinal herb.

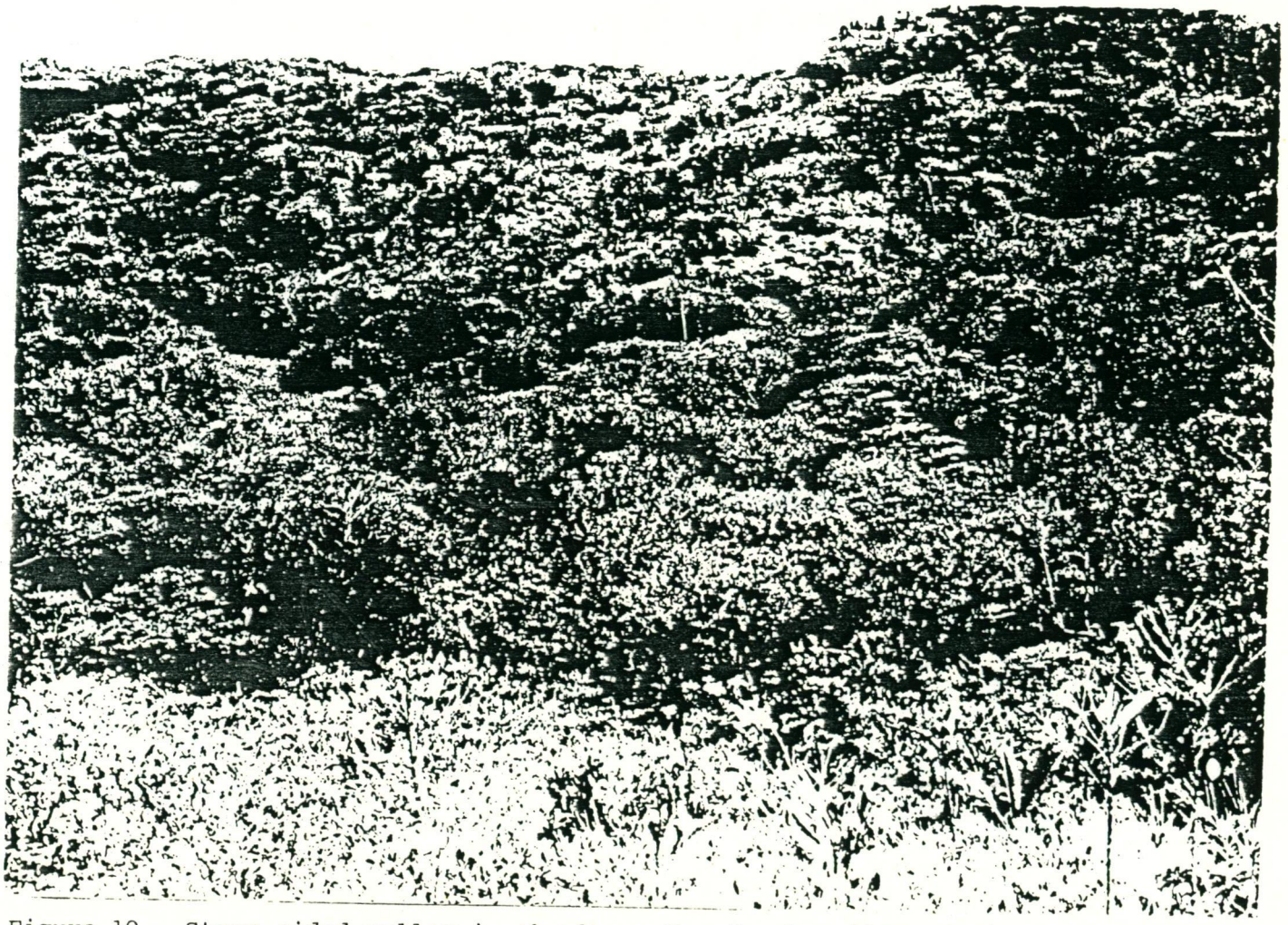

Figure 19. Steep-sided valley in the lower Ngerdorch valley, facing north along a tributary to the Meskelat River near Ngerdorch.

Figure 20. Rolling hills and open savanna of the upper Ngerdorch valley, Delmel Mobel, facing west to Simizu along the Simizu Road.

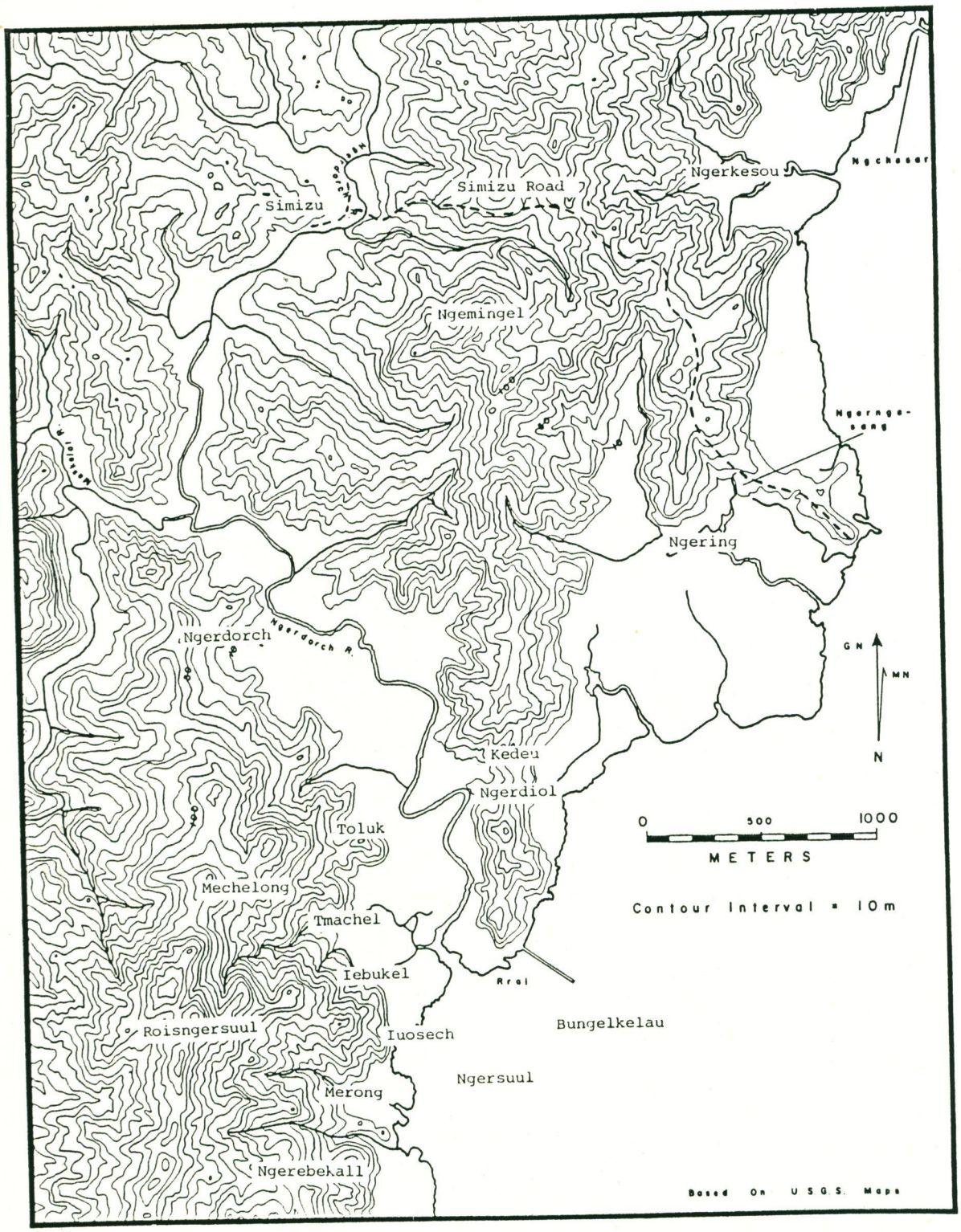

Figure 21. Place names in Ngchesar.

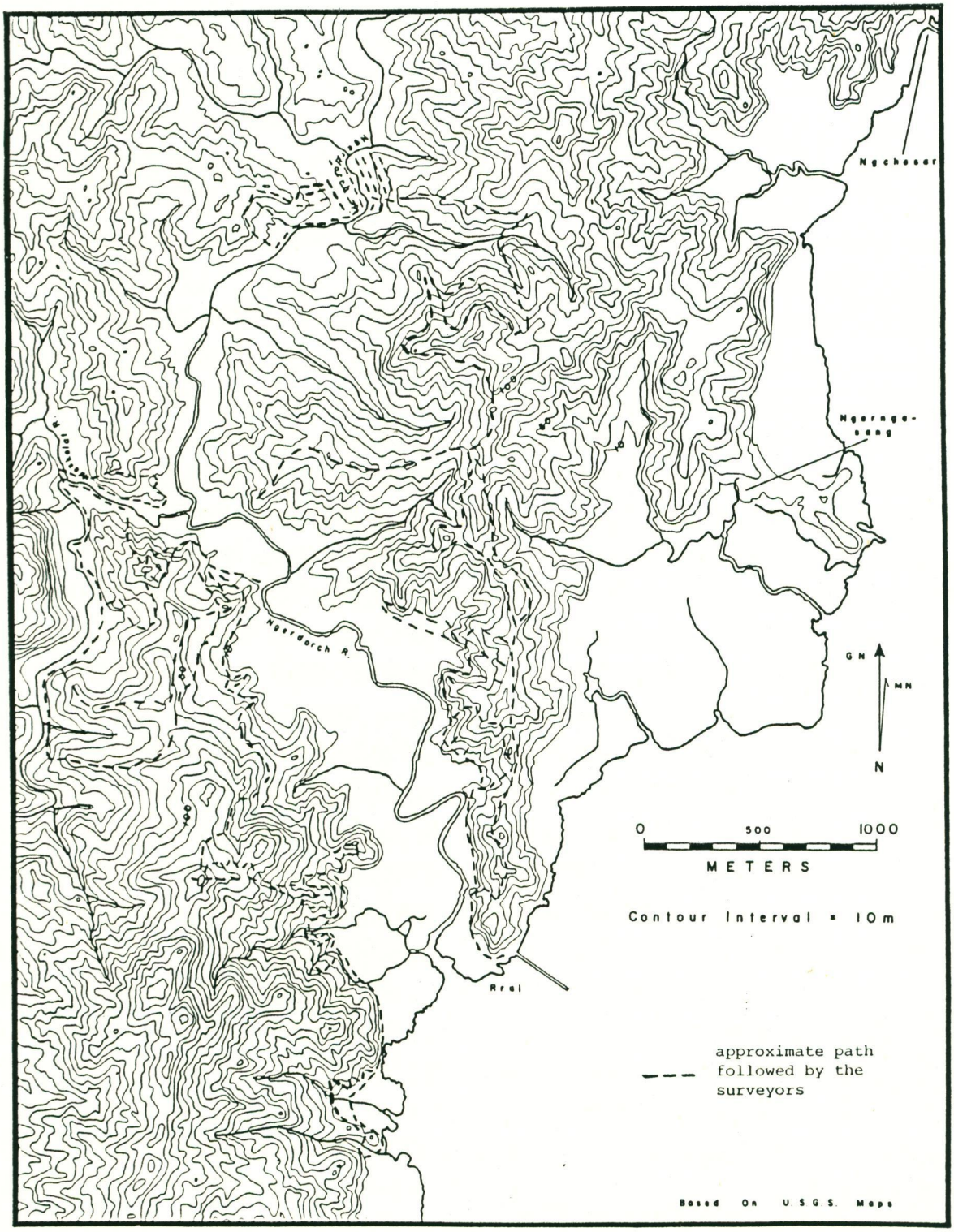

Figure 22. Approximate path followed by the surveyors in Ngchesar.

Ngemingel and its hamlet of Kedeu. For this the chief of Ngerngesang is said to have rewarded the people of Bungelkelau by extending their territory to include Ngemingel and Kedeu. At this time Bungelkelau was a collection of villages clustered around the mouth of the Ngerdorch River (Fig. 23A and Fig. 23B). The villages included Tmachel, Iebukel, Merong, Ngerebekall, Ngerdorch and Bairiyoech.

At some time after the defeat of Ngemingel the area of Bungelkelau was caught in the middle of the feud between the Ibedul in Koror and the Reklau in Melekeok. At this time northern Ngchesar was known as Choldeais. As the antagonism between the Ibedul and Reklai increased and alliances were formed Bungelkelau was conquered. An agreement between Ibedul and Reklai established the area along the lower Ngerdorch River as a No-Man's-land. The name Bungelkelau was then changed to Ngersuul. The word Ngersuul comes from the Palauan word merus which means to pierce. In 1783 the Ibedul received guns from the English intensifying the rivalries. It appears that only a few people lived in this area during the 1800s (Fig. 23C). At this time the older areas of Bungelkelau and Choldeais were part of the east coast confederacy known as Ngartingall. In recent years people have been moving back to the villages in Ngchesar State (Fig. 23D). The schematics shown in Fig. 23 are intended to represent shifts of power through time from the perspective of Bungelkelau. The most influential villages are shown; the figures do not show all of the villages, nor the largest villages. In fact, with the exception of Simizu and Rrai, all of the villages shown were in existence throughout all of the time shown; some villages, such as Merong and Tmachel, are not presently inhabited, but the people of Palau know who the chiefs of these villages are and recognize them as such. Thus the villages do not separate into a neat seriation by the times during which they were inhabited, but the shifts of power and influence should produce interesting archaeological manifestations once we have learned to identify them. As a final note, during the survey I was asked to refer to the area as Bungelkelau rather than as Ngersuul.

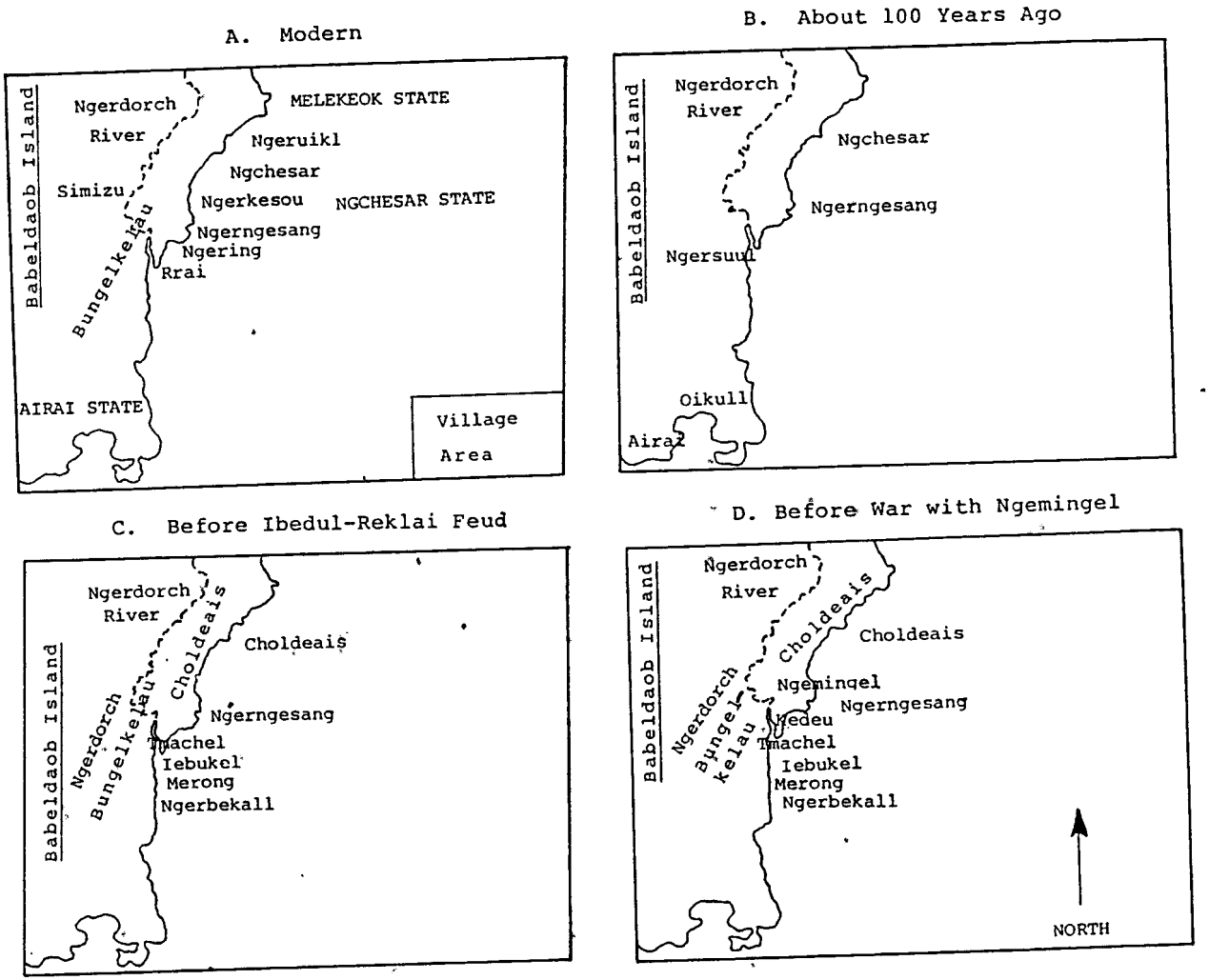

Figure 23. Synchronic schematic depicting changes in the influential villages as seen from the perspective of Bungelkelau.

The survey in Ngchesar involved over 150 hours of work during the course of 1 week. All of the sites identified are listed in Table 5. A detailed map of the features of Tmachel Village was made using a Brunton-like compass, tape, metric rod, and hand level. The lengths and widths of the feature with their Palauan names are shown in Table 6.

Archaeological Background

In his 1954 survey Osborne identified archaeological areas around Ngerngesang, Ngchesar and Ngeruikl villages (1966:250-257). In 1969 he returned to Ngerngesang to work on the impressive terraced hill site he designates as B40 (1979:113-128). During the 1968-1969 field season Osborne also surveyed the Ngemingel site which he designates as B56 and the Tmachel Site (Ngersuul) which he designates as B57 (1979:283-284).

Traditional Sites

Tmachel Village Area

B:NC-1:1 is the traditional village of Tmachel (Figs. 24 and 25, Table 6). Tmachel is the largest of the villages of Bungelkelau. The remains include a large dock with an elud that has 5 backrests, a carved monolith, numerous odesongel and pathways, and several scatters of sherds (see also Osborne 1979:284). There are also two areas of terracing; the profile of one terrace is shown in Fig. 26. The other set of terraces is in a forested area. Fig. 27 shows a large, stone platform in Tmachel Village (Fig. 25:B:NC-1:1, F.7) named Kaudrael. The carved monolith is about 90 cm high with a face on one side (Fig. 28). The monolith is also described by Osborne (1979:284).

B:NC-1:2 is the traditional village of Merong (Fig. 24). The site is located in a basin south of B:NC-1:1. Three platforms were found on the lower, forested slopes north of the taro swamp; it is reported that more platforms lie further up the slopes. Sherds were noted throughout the site, especially along the small stream that runs through the site. A

TABLE 5

SITES IDENTIFIED IN NGCHESAR

Site Code	Artifacts and Features Observed*					
	Sherds	Chert	Terraces	Stonework	Shell	Historic Constructions
B:NC-1:1	p	-	p	p	-	p
B:NC-1:2	p	-	p	p	p	p
B:NC-1:3	p	-	p	p	-	-
B:NC-1:4	p	-	p	p	-	p
B:NC-1:5	p	-	-	-	-	-
B:NC-1:6	p	-	-	-	-	-
B:NC-1:7	p	-	p	p	p	p
B:NC-1:8	p	-	p	-	-	p
B:NC-1:9	p	-	p	?	-	p
B:NC-1:10	-	-	-	-	-	p
B:NC-1:11	-	-	-	-	-	p
B:NC-1:12	-	-	-	-	-	p
B:NC-1:13	-	-	-	-	-	p
B:NC-1:14	-	-	-	-	-	p
B:NC-2:1	p	-	p	-	-	-
B:NC-2:2	p	-	p	-	-	p
B:NC-2:3	p	-	p	p	-	-
B:NC-2:4	p	-	p	-	-	-
B:NC-2:5	p	-	p	-	-	-
B:NC-2:6	-	-	p	-	-	-
B:NC-2:7	-	-	-	p	-	-
B:NC-2:8	-	-	-	-	-	p
B:NC-2:9	-	-	-	-	-	p
B:NC-2:10	-	-	-	-	-	p
B:NC-IF-2:1	p	-	-	-	-	-
B:NC-IF-2:2	p	-	-	-	-	-
B:NC-IF-2:3	p	-	-	-	-	-

Table 5 (continued)

Site Code	Sherds	Chert	Terraces	Stonework	Shell	Historic Constructions
B:NC-IF-3:1	-	-	-	p	-	-
B:NC-IF-3:2	p	-	-	-	-	-
B:NC-7:1	p	-	-	-	-	-
B:NC-7:2	-	-	-	-	-	p
B:NC-7:3	-	-	-	-	-	p
B:NC-IF-7:1	p	-	-	-	-	-
B:NC-IF-7:2	p	-	-	-	-	-

* p = presence of artifact or feature observed at the site.
  - = artifact or feature was not observed at the site, and probably is absent.

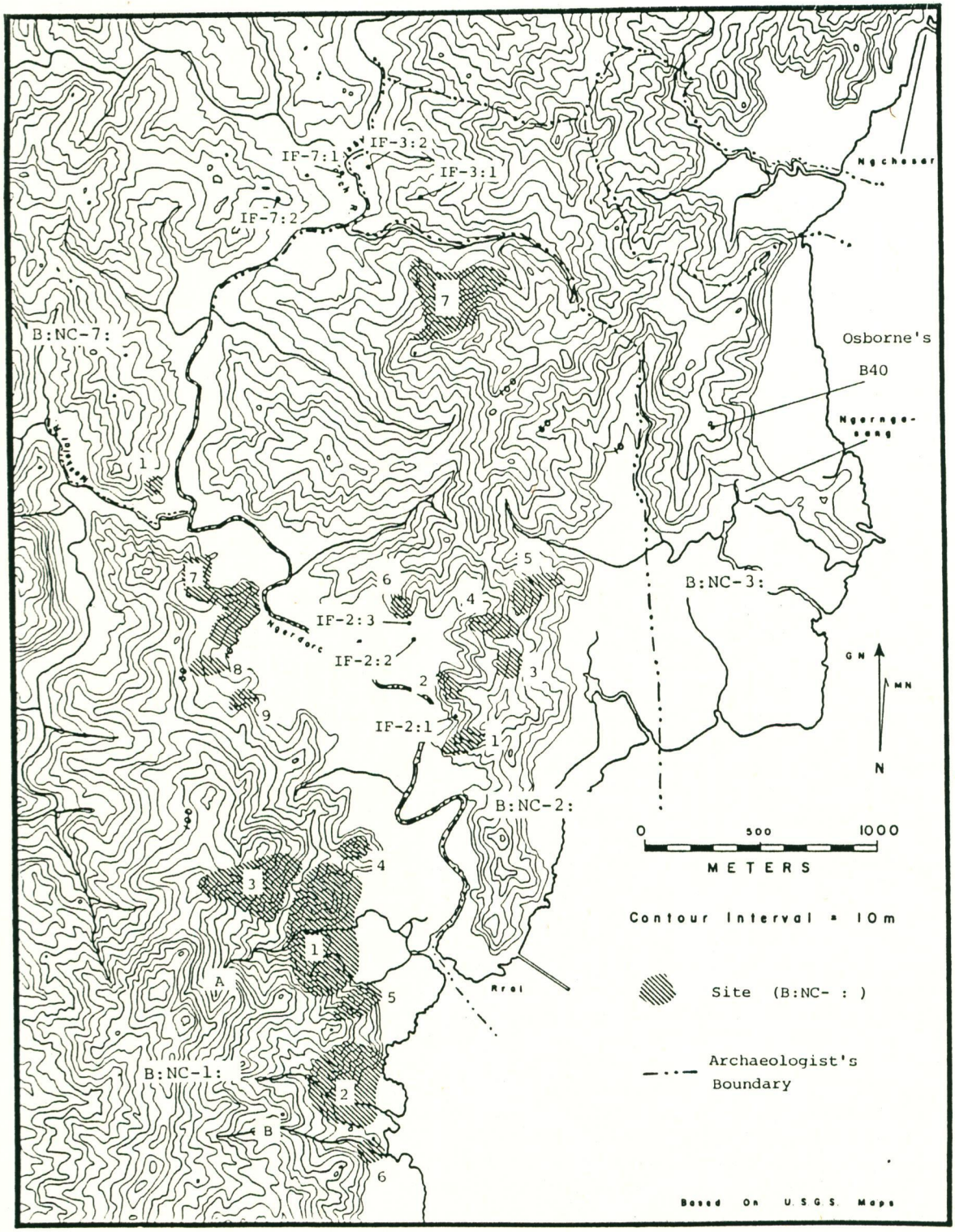

Figure 24. Traditional sites identified in Ngchesar.

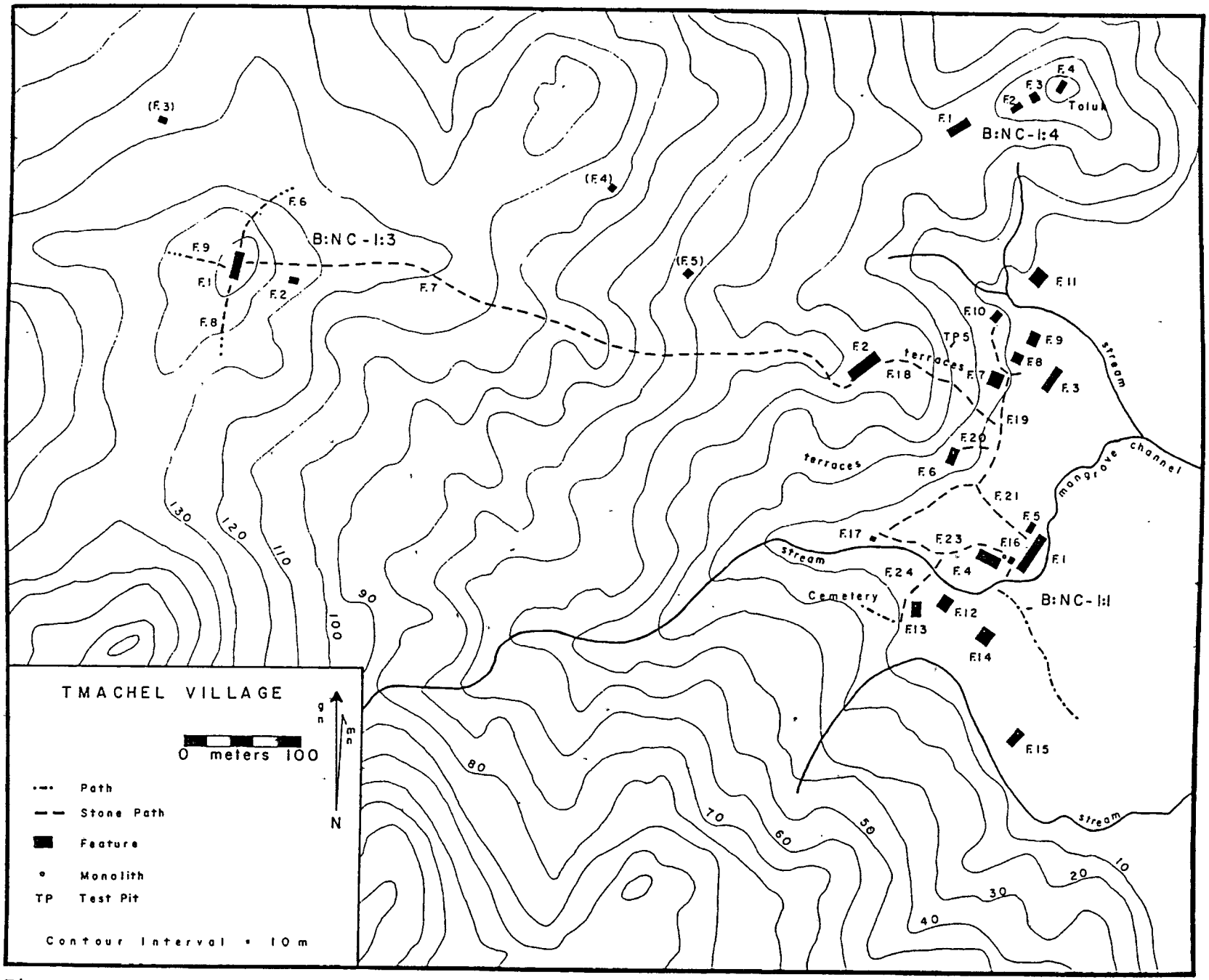

Figure 25. Map of the features in the Tmachel Village site with features of B:NC-1:3 and B:NC-1:4.

TABLE 6

DESCRIPTION OF FEATURES MAPPED IN NGCHESAR VILLAGES

Site Number	Feature Number	Kind of Feature	Palauan Name* (if known)	Size (m long by m wide)	Comments
B:NC-1:1	1	platform	Bai ra Sabchelung	43.3 x 10.4	with Tabchang (dock)
	2	platform	bai - name unknown	28.0 x 8.0	
	3	platform	Bai ra Ongebechachel	-	
	4	platform	Blai ra Ngermechu	20.5 x 11.6	with monolith
	5	platform - coral	Blai ra Baibersus	12.8 x 6.5	
	6	platform	Blai ra Besisobel	14.5 x 7.7	
	7	platform	Blai ra Kaudrael	12.7 x 12.0	
	8	platform	Blai ra Ongeluutel	10.8 x 10.0	
	9	platform	Blai ra Iechur	10.6 x 10.2	
	10	platform	Blai ra Orechong	12.8 x 11.7	
	11	platform	Blai ra Ultilong	9.6 x 9.0	
	12	platform	Blai ra Imechong	12.0 x 10.0	
	13	platform	Blai ra Telilei	14.6 x 9.7	
	14	platform	Blai ra Ibeluu	12.8 x 12.8	
	15	platform	Blai ra Meketii	14.8 x 7.7	
	16	platform	elud	4.8 x 3.3	with 5 backrests
	17	platform	elud	-	
	18	stone path	-	-	
	19	stone path	-	-	
	20	stone path	-	-	

Table 6 (continued)

Site Number	Feature Number	Kind of Feature	Palauan Name* (if known)	Size (m long by m wide)	Comments
B:NC-1:1	21	stone path	-	-	
	22	stone path	-	-	
	23	stone path	-	-	
	24	stone path	-	-	
B:NC-1:3	1	platform	bai - name unknown	26.0 x 16.0	approximately
	2	platform	blai - name unknown	-	
	3	platform	blai - name unknown	-	
	4	platform	blai - name unknown	-	
B:NC-1:4	1	platform	bai - name unknown	18.6 x 7.8	
	2	platform	blai - name unknown	-	partially destroyed
	3	platform	blai - name unknown	-	partially destroyed
	4	platform	blai - name unknown	13.0 x 7.0	

* Bai is the Palauan word for meeting house, blai is the Palauan word for house, and elud is the Palauan word for small resting place ususally along a path or at the end of a path.

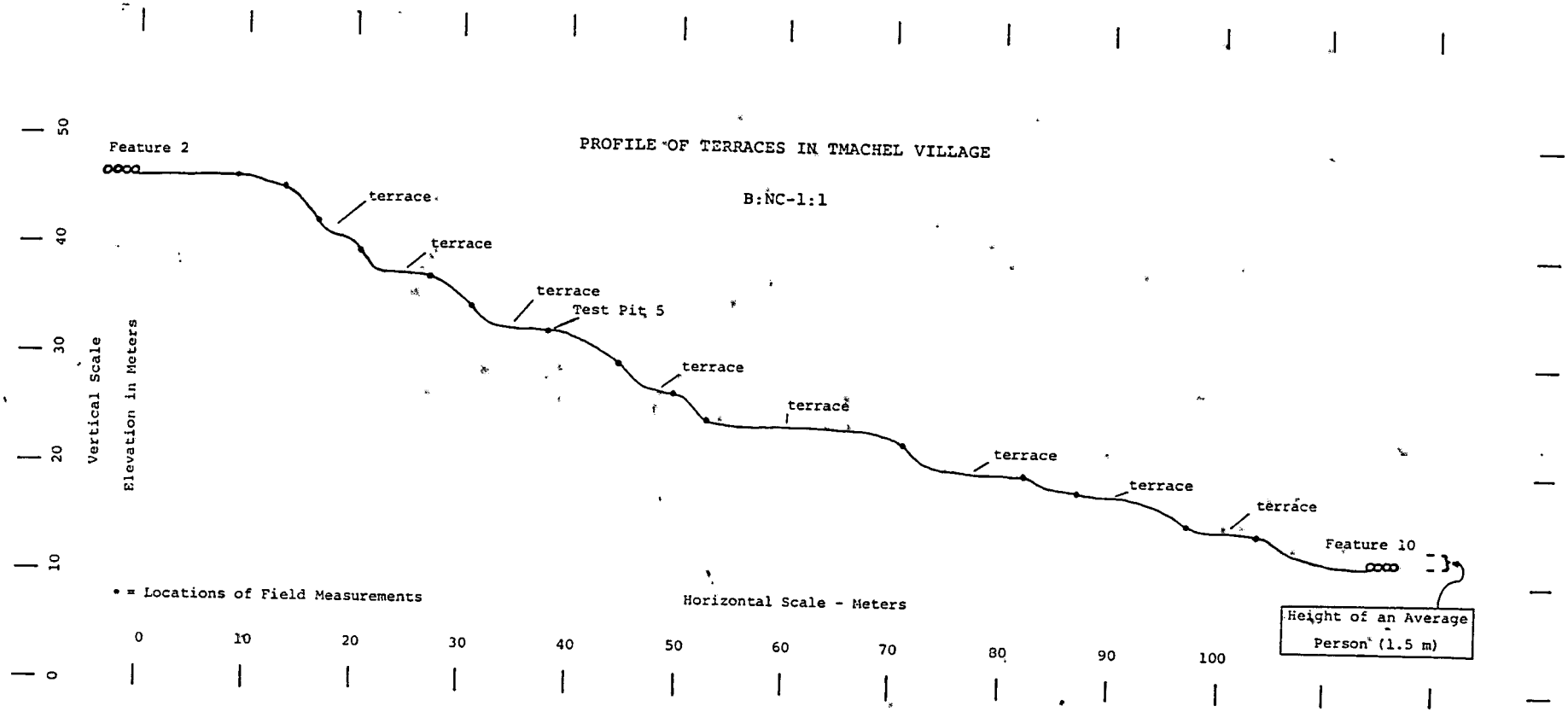

Figure 26. Profile of terraces in the Tmachel Village site, B:NC-1:1 (see Fig. 25).

Figure 27. A large stone platform, B:NC-1:7, F. 7, Odesongel ra Kaudrael, with Noah Adolf, left, and Delmel Mobel.

Figure 28. Carved monolith at B:NC-1:1, F. 4; name unknown; height approximately 90 cm.

shell midden was found on the hillside downslope from the southern most of the three platforms.

B:NC-1:3 is a part of the traditional village of Tmachel that is located high on the hill northwest of the main part of Tmachel Village (Figs. 24 and 25, Table 6). Several areas of stone paving were encountered on the forested slopes. Occasionally the steep slopes are terraced. A few sherds were found, eroding out of banks and terrace cuts, but generally the ground cover limited visibility. This area is known as Mechelong.

B:NC-1:4 is a part of a traditional village on a small hill, Toluk, overlooking the river north of B:NC-1:1 (Figs. 24 and 25, Table 6). One large bai and three odesongel were recorded on the ridge and on the top of the knob of the hill. Many sherds were found on the site, especially on the top of the hill. The south face of the hill is terraced with two and three steep steps.

B:NC-1:5 is the small traditional village of Iebukel (Fig. 24). Iebukel lies along a small stream between Merong and Tmachel. Although no areas of stone paving were observed during the survey it is reported that there are platforms on the hillsides above the stream. Sherds were found along the stream near where it enters the mangrove swamp.

B:NC-1:6 is a scatter of sherds on a small hill between Merong and Ngerebekall villages (Fig. 24). The hill is in garden plots. A variety of sherds were noted.

B:NC-1:7 is the traditional village of Ngerdorch (Fig. 24). The village is on the lower north facing slopes of the hills that reach down to the river at the point where the river enters the mangroves. There are numerous areas of stone paving on the terraced hillsides. Scatters of sherds were found on the terraces. A shell midden was found behind, south, the remains of the dock. The shell midden as well as several other features in the site has been disturbed by the construction of the bladed

road. The terraces extend along the hillsides north to a small hill that overlooks the river and is part of a ridge that reaches the river about 100 meters southeast of the juncture of the river and its major tributary. The north and east faces of the hill are terraced and a few sherds were found on the barren ground. The terraces extended into the forest. No sherds were found in the bottom land north of the hill, though the ridges from the tapioca gardens were quite apparent.

B:NC-1:8 is a scatter of sherds found along the Japanese road which was bladed along the south side of the river (Fig. 24). The site is in the forest. It appears that the road was bulldozed along a terrace. There appear to be two or three low terraces on the lower slopes. The site is northwest of a large clearing along the river.

B:NC-1:9 is a terraced hillside in a clearing north of Tamchel Village (Fig. 24). The terraces at the top of the slope are steep while those on the lower slopes are low and sloping. One sherd was found on the barren ground which was intensively surveyed. On the topmost terrace is a large stone wall enclosure, apparently related to the Japanese road (see B:NC-1:14) or a farmstead for the Simiza Plantation. The enclosure is about 20 meters by 10 meters; the wall is 40 cm to 50 cm high.

The letter "A" shows the location of the traditional village of Bairiyuoech (Fig. 24). This small hamlet was not recorded during the survey but is reported to be located high in the hills west of Tmachel, B:NC-1:1.

The letter "B" shows the location of the traditional village of Ngerebekall (Fig. 24). The village was pointed out to the author during the survey but it was not visited. The village is in the hills south of Merong, B:NC-1:2.

Ngerdiol Village Area

B:NC-2:1 is a terraced hillside with a scatter of sherds (Fig. 24). The hillside is the southwest facing ridge that descends from the main ridge along the coast. The terraces are low and sloping. The ground has been recently cleared of grass for gardens.

B:NC-2:2 is a terraced hillside with a scatter of sherds (Fig. 24). The hillside is the lower part of the south face of a ridge descending west from the main ridge. The bottom of the slope has been dug out for a house foundation. Sherds were found in the clearing around the dug-out area. The terraces extend from the clearing into the forested part of the slope. The terraces are low and sloping.

B:NC-2:3 is the traditional village of Kedeu (Fig. 24). The site is on the ridge between the river and the east coast. Three odesongel and one bai were found at the edge of the forest just north of the top of a small hill. A few sherds were found in a clearing just below the ridge at the southern edge of the site.

B:NC-2:4 is a west-facing, terraced hillside at the end of the trail from Rrai Village along the river (Fig. 24). The terraces are steep and sharply cut. The area was recently cleared of forest for gardens. A few sherds, predominantly thin, black sherds, were noted on the terraces and in the gardens at the base of the slope.

B:NC-2:5 is a terraced hill on the east side of the main ridge overlooking the modern village of Ngerdiol (Fig. 24). The grassy east face of the hill has steep, sharply cut terraces with footcatchers on the north and south sides. The terraces ring the top of the hill for the first couple of steps and terraces descend the east face into the coconut plantation below. The terraces to the west are low and sloping with sparse grass and few sherds. The terraces on the west face only descend part way down the slope.

B:NC-2:6 is a terraced hillside above the swampy, low ground along the north side of the Ngerdorch River (Fig. 24). The hillside is densely forested. No sherds were found on the site. The terraces are low and sloping. Three or four terraces were found on the bottom of the slope.

B:NC-2:7 is the traditional village of Ngemingel (see also Osborne 1979:283-284). The village is located in dense forest on the north end of a high hill along the main ridge (Fig. 24). The village is about half way between the coast and the river. It looks over a valley that forms a gap in the ridge west of Ngerngesang. Several areas of stone paving and several areas thought to be the remains of stone paving were found in the forest high above the valley floor. Several fallen trees were inspected but no sherds were found in their roots. No artifacts other than the platforms were found.

B:NC-IF-2:1 is a single sherd found in the gardens above the house and north of B:NC-2:1 (Fig. 24). The sherd was in a large cleared area.

B:NC-IF-2:2 is a single sherd found in the maze of dense growth in the swampy low land between B:NC-2:3 and B:NC-2:6 (Fig. 24).

B:NC-IF-2:3 is a single sherd found along a small stream at the base of the hillside west of B:NC-2:6 (Fig. 24).

Ngerngesang Village Area (B:NC-3:)

B:NC-IF-3:1 is a small stone platform, elud, found on the south side of the Simizu Road about 200 meters east of the Ngerdorch River (Fig. 24). The platform is a resting place and guard station along the trail that leads across Babeldaob Island.

B:NC-IF-3:2 is a single sherd found on the barren ground east of the Ngerdorch River about 50 meters north of the road (Fig. 24). The sherd, a thick, brown sherd, was found on the slope above the flood plain several

meters from the yard of a house used during the 1940s (see also B:NC-IF-7:1 and B:NC-IF-7:2).

"B40" shows the location of Osborne's (1979:113-128) work on the B40 terraces (Fig. 24). This area was not included in the survey. A stop at the site was made while visiting people in Ngerngesang and Ngchesar.

Simizu Village Area

B:NC-7:1 is a small scatter of sherds at the base of the hillside north of the juncture of the Ngerdorch River and its major tributary, the Meskelat. Three thin, black sherds were found on the west side of the river in a large cleared area on barren ground. The sherds were found about 50 meters north of an old farmstead. There were also noted many ridges of tapioca garden in the bottom land and low on the hillside.

B:NC-IF-7:1 is a single sherd found in the gardens on the west side of the Simizu bridge across the river from B:NC-IF-3:2. The sherd has a medium thickness with a red color.

B:NC-IF-7:2 is a single sherd found along the path leading west from Simizu. The sherd was found on a clear, bare hillside. The sherd is a thin, black sherd.

Review of the Historic Period

During the 1800s only a few people remained in the villages of Ngersuul. A coral dock in the northeast corner of the Merong Site, B:NC-1:2 (see above) was, according to an informant, built during the German administration. All of the rest of the historic period remains date from the Japanese administration.

During the Japanese administration a large agricultural plantation was established along the Ngerdorch River (Fig. 29). The plantation was called Simizu; occasionally the name is spelled Shimizu. This was one of

the first of the plantations established by the Japanese. The plantations supplied fruits and vegetables to Koror, and later to the military. The gardens covered large tracts of land on both sides of the river from below the juncture with the Meskelat River to well north of the river crossing at Simizu. Fig. 29 is taken from a map shown to me by a resident of Simizu who kindly allowed me to xerox the map. It is not known who made the original, or when it was made.

Today the ridges from the tapioca gardens can still be seen, some 40 years after the gardens were taken out of use, in many cleared areas along the river. Also, remaining are the scattered farmsteads; Simizu was not a nucleated settlement. Also, traces of the road system built by the Japanese were found during the survey. The historic period sites are shown on Fig. 30. The village of Rrai was established in about 1960 when the residents of the villages south of the river found it difficult to cross the river daily to send their children to the schools at Ngerngesang and Ngchesar.

Tmachel Village Area

B:NC-1:10 is an area with tapioca ridges south of the juncture of the Ngerdorch and Meskelat Rivers (Fig. 30). The ridges were noted in the flat bottomland. The area had been recently burned removing the grass and brush.

B:NC-1:11 is the remains of a farmstead from the late 1930s in the first clearing along the south fork of the Meskelat River (Fig. 30). The dug out area for the foundation and pieces of glass and metal were found on the grassy hillside above the floodplain.

B:NC-1:12 is a stone-lined well found in a grassy clearing part way up the hillside above the floodplain. The well is about 1.5 meters in diameter and the water table was about 4 meters below the surface during the survey.

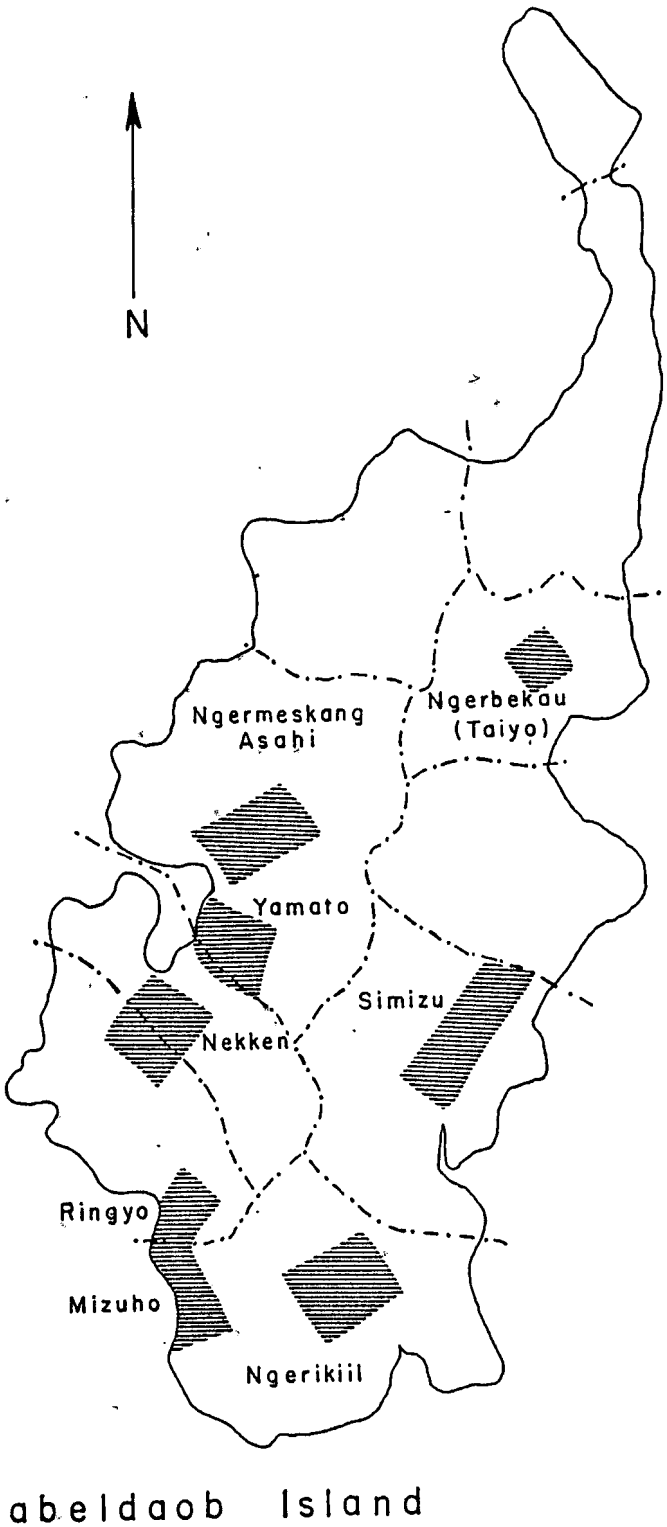

Figure 29. Locations of Japanese agricultural plantations on Babeldaob Island with approximate state boundaries.

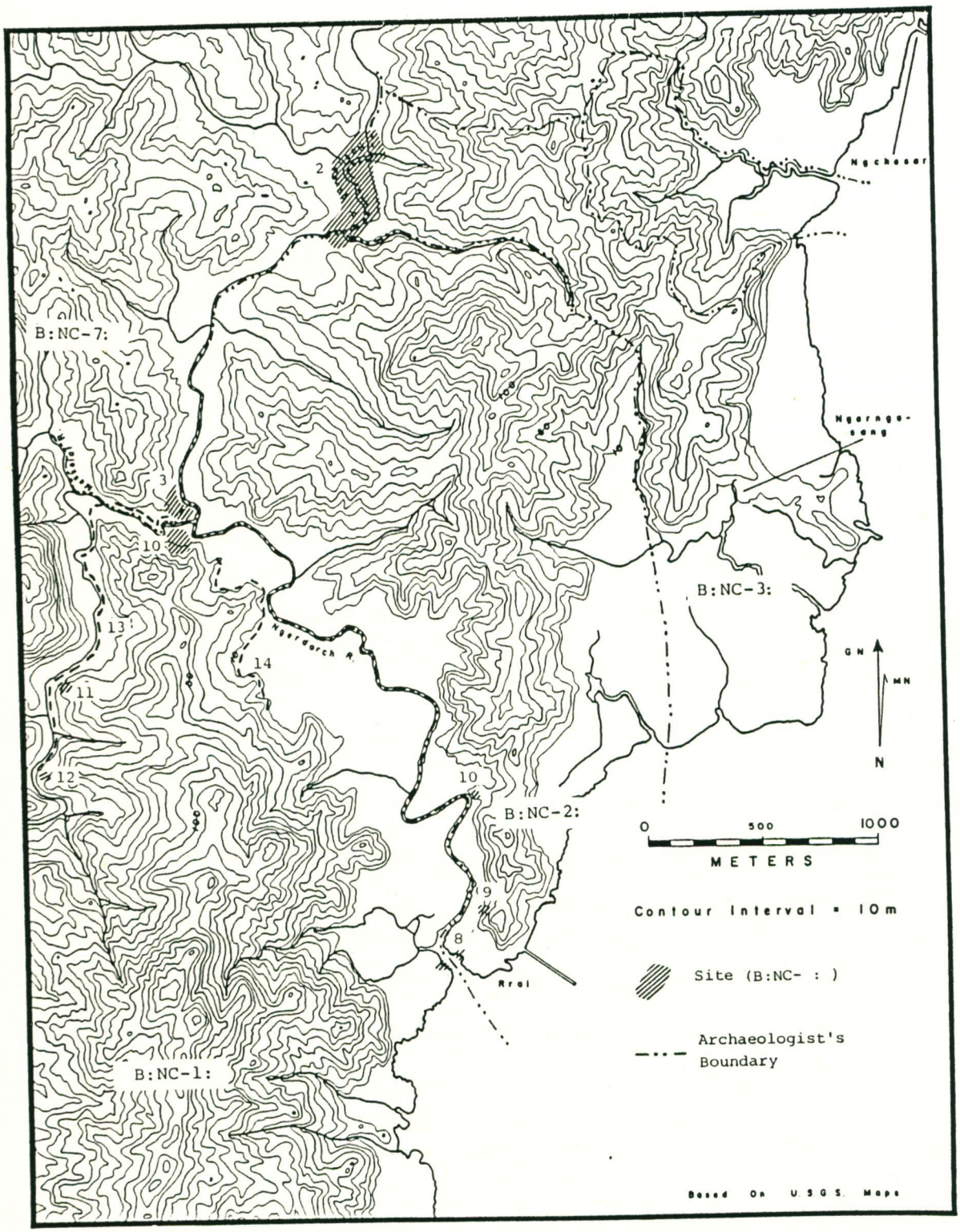

Figure 30. Historical sites identified in Ngchesar.

B:NC-1:13 is the traces of the road to Airai along the south fork of the Meskelat River (Fig. 30). The road is overgrown with trees but the road cuts still show where it was bulldozed.

B:NC-1:14 is the traces of the road south from the juncture of the Meskelat and Ngerdorch Rivers on the south side of the Ngerdorch River (Fig. 30). The road is overgrown with trees but the road cuts still show where the road had been bulldozed.

Ngerdiol Village Area

B:NC-2:8 is the coral rubble piles on either side of the mouth of the Ngerdorch River (Fig. 30). The piles were part of the bridge built across the Ngerdorch as a part of the Japanese road system.

B:NC-2:9 are two circular, stone-lined foundations of a charcoal burner (Fig. 30). They are a short distance from Rrai on the south side of the trail.

B:NC-2:10 is the remains of the 1960s Ngersuul Pottery Kilns (Fig. 30). It is included here not only because of the interesting brick kilns which overlook the river, but also because it is built near a source of clay that was, according to informants, used traditionally. A sample of clay was collected.

Simizu Village Area

B:NC-7:2 is the Simizu plantation (Fig. 30). The remains of the plantation lie along both sides of the Ngerdorch River, but primarily on the west bank. The terrain here is low rolling hills covered with sparse clumps of grass. The floodplain is broad with deep soil. Scattered remains of farmsteads and buildings were also noted across the plantation. The site probably extends further to the north and south than shown, but these areas were not surveyed.

B:NC-7:3 is the remains of a small farmstead just north of the juncture of the Meskelat and Ngerdorch River (Fig. 30). The wood and tin building still stands, but large portions have rotted away. Tapioca ridges were noted on the hillsides and on the floodplain around the farmstead (see B:NC-7:1).

Test Pits

Four test pits were excavated during the survey. The test pits were placed in B:NC-1:1, B:NC-1:2, B:NC-2:3 and B:NC-2:4.

Test Pit 5 is located in B:NC-1:1 on the steep terraced hillslope on the second step below the bai. The Test Pit is near the point of the terrace where the ground begins to slope but is still fairly level. The top 10 cm is a gray-brown (10YR 5/3 brown), friable soil containing sherds. From 10 cm to 20 cm is a layer of terrace fill. The soil is brown (10YR 4/3 brown) with charcoal and small rocks and containing chert and sherds. A small amount of charcoal was collected. From 20-25 cm is a layer of brown (10YR 4/3 brown) soil with a large number of rocks. The rocks do not appear to be a feature or part of an intentional construction. A second small sample of charcoal was collected from 20-22 cm below surface. From 25 cm to 40 cm, the bottom of the excavations, is a brown (7.5YR 5/4 brown), clayey, smooth soil containing sherds. At 40 cm streaks of red (2.5YR 4/6 red) clay were noted.

Test Pit 6 is located in the shell midden downslope from one of the platforms in B:NC-1:2. The Test Pit was 25 cm x 25 cm. The top 10 cm is solid shell. Beneath this there are increasing amounts of soil to the bottom of the shell midden at 20 cm. The soil is first a dark black-brown (5YR 3/1 very dark gray), loose, crumbly soil with a high humus content. At 20 cm the soil is a light color (10YR 3/3 dark brown) and more clayey than above. A large rock was encountered at a depth of 25 cm and the excavations halted. A few sherds were found with the shell.

Test Pit 7 is located in B:NC-2:3. The Test Pit is located about 1.5 meters west of one of the odesongel (stone platforms) of Kedeu. The ground

cover is brush. The top soil is gray-brown (10YR 3/3 dark brown), loose and crumbly with roots. The soil below the top soil, 8 cm to 20 cm, is brown (10YR 4/4 dark yellowish brown) and silty. No artifacts and only a few small rocks were found in the top 20 cm. One sherd was recovered from the 20 cm to 30 cm level; a thin, black sherd. The soil in this level is reddish brown (7.5YR 5/6 strong brown) and clayey. The excavations were halted at a depth of 35 cm when streaks of red clay began showing through the soil.

Test Pit 8 is located in B:NC-2:4 on the top of the west face of a terraced hillside. The terraces are steeply cut. The area was recently cleared of forest for gardening. No artifacts were recovered from the Test Pit. The top soil, 0 cm to 8 cm, is brown (10YR 5/4 yellowish brown) with a thick root mat. From 8 cm to 18 cm the soil is darker (7.5YR 4/4 brown) and not as crumbly as the top soil. From 18 cm to the bottom of the excavations at 30 cm the soil is reddish brown (5YR 5/6 yellowish red) and clayey.

CONCLUSIONS AND RECOMMENDATIONS

Since the purpose of this report was not to present a synthesis of the finds, only a few general conclusions will be broached. In each area that was surveyed the foci of traditional activities are the village systems. It is around the villages that the greatest variety of sherds and other artifacts is found. On the hillsides around the villages are the largest terraces, but it is still not known what relationships existed between the terraces and villages. Moving farther away from the villages the terraces are lower and sloping, and there is less variety in the sherds found on these terraces. Still, farther away there are scatters of sherds. The thinnest scatters of sherds, found in areas well away from the villages, are, in both cases, deposits of thin, black sherds. Osborne considers these sherds to be from earlier times (1966:463-464).

The historic period sites are associated with activities of the Japanese administration. They are characterized by being very widespread and pervasive, especially in Ngardmau where the strip mines cover many hectares of land.

The purpose of this report is to provide data for the management of cultural resources. One of the goals in managing cultural resources is to protect the most important resources. Each resource is important, but clearly some resources are more important. That is, they contain valuable information for us today. There are many different ways in which a resource may be valuable so that plans for managing resources must consider a wide range of facts.

This report presents descriptions of archaeological sites in two areas on Babeldaob Island. These sites are cultural resources, but they are not all of the cultural resources for these areas. The descriptions contained in this report are a first step in collecting data on these cultural resources. Much more information can be gleaned on the sites from sources such as the oral histories.

As more information is collected on each resource its value can be more accurately determined. And comprehensive plans designed to protect these non-renewable cultural resources can be developed.

In the protection and preservation of cultural resources an important consideration is to protect and preserve a wide variety of different kinds of resources. This is especially true in Palau where the significance of different resources is poorly understood. The different kinds of sites identified in the surveys present special problems for the manager of cultural resources. In the recommendations offered below each of the three different kinds of sites is considered: first, the scatters of sherds; second, the traditional village systems; and third, the terrace systems.

Data from scatters of sherds are valuable in helping us study how people lived in traditional times: how they prepared foods and organized their domestic lives. As the sherds in a site become increasingly mixed and broken by disturbances it becomes increasingly difficult to retrieve these data. Retrieving data from scatters of sherds requires controlled investigations using excavations. This is especially true for the scatters of sherds with the most sherds such as B:NR-1:12. Most of the thin scatters of sherds lie well away from the current plans for development and are protected by their isolation. It would be difficult to relocate thin scatters of sherds like B:NR-4:1 and B:NC-7:1 in any event. Given the thin soils on which these thin scatters are found it would be difficult to obtain useful data from them with additional research.

In each area the village systems are important cultural resources. The village systems contain the remains of the stone platforms and pathways of the traditional villages and thus contain valuable information on life in Palau. The stone platforms, odesongel, are the symbols of the clans and signify the roles, responsibilities and prerogatives of the clan. As cultural resources, the importance of the village systems is heightened by their visual impact. Unfortunately, the village systems are generally where the modern villages are located, and where plans for

development are focused. Whenever possible the stone features should be protected. It should be possible to protect these features without hindering development. There is a need to collect additional information from the oral histories on each of the features in the village systems. There is also a need to refine and extend the maps of the village systems. Protecting the visible (above ground) features in the village systems is only part of what is needed to protect and preserve these cultural resources. There is much that can be learned from excavations in villages concerning how people lived and the relationship between the villages and terraces (see Snyder et al. 1983). Future plans for research in village systems should include plans to conduct excavations. In Ngardmau, the village sites of B:NR-1:1, B:NR-1:4, B:NR-2:1, B:NR-2:3, and B:NR-3:1 are an important set of cultural resources. In Ngchesar, the village site of B:NC-1:1 is a very important resource and the sites of B:NC-1:2, B:NC-1:3, B:NC-1:4, B:NC-1:5, B:NC-1:6, B:NC-1:7, B:NC-2:3, and B:NC-2:7 are important cultural resources.

The terraces remain enigmatic. The terraces are the remains of massive earthmoving and earthshaping projects, but is is not known over what length of time the work was accomplished. The terraces are the remains of a time in Palau's past about which we know very little, still, it must have been a very significant time in the development of Palauan culture. It is essential that additional studies of the terraces of Palau be carried out, and this mandates the protection of terrace systems for future studies. There is much to be learned from excavations on the terraces in both Ngardmau and Ngchesar. Especially the terraces of B:NR-1:2, B:NR-1:3, B:NR-2:2, B:NR-3:3 in Ngardmau and B:NC-1:1 and B:NC-2:5 in Ngchesar are important resources. In addition, the smaller sets of terraces such as B:NR-1:6, B:NR-1:8 and B:NR-1:9 in Ngardmau and B:NC-1:9 and B:NC-2:4 in Ngchesar should be included in plans for future research.

The terraces are difficult resources to protect. Although the larger sets of terraces are visually impressive, the terraces offer large flat, cleared areas that are often ideal for construction. Since so little is

known about the terraces and their connection to the culture of modern Palau is much less understood than the villages it is going to require extra efforts to insure that the most important terraces are protected.

The historic period sites offer some spectacular remains, such as B:NC-3:7, but too often these remains are falling apart and present safety hazards. The best way to preserve these remains is often through photographs and studies by historians.

In conclusions, from a managerial perspective, this report documents that there are large sites all around the perimeter of Babedaob Island and that there are important sites extending far into the interior. Without first checking (i.e. survey), it is impossible to state that an area is free of sites; and even after checking such a statement may not be correct for densely vegetated areas. Thus there will be a continuing need to intensively survey previously unstudied areas in advance of construction projects.

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APPENDIX A

RADIOCARBON DATES

Beta-8091 = 140 ± 87 radiocarbon years B.P.

A sample of shell from B:NR-2:2, Test Pit 3, level 3, the lower 10 cm of the shell dump, 25-35 cm below surface at datum (see pages 40-41 of this report) was submitted to Beta Analytic, Inc. of Coral Gables, Florida. The sample, Beta-8091, was run for C-13/C-12 and O-18/O-16 ratios in addition to the standard C-14 counting. The C-14 age years B.P. ± 1 S.D. = 110 ± 80 B.P. The C-13/C-12 ratio = +1.78 o/oo. The O-18/O-16 ratio = -1.95 o/oo. The C-13 adjusted C-14 age = 550 ± 90 B.P. The resevoir effect based on the Fiji Shell Standard = -50 o/oo Δ C-14. The resevoir effect is the apparent age of sea water based on the calculation of the C-14/C-12 ratio in live sea shells collected in Fiji prior to 1952. The adjustment for the resevoir effect is necessary because sea shells live in isotopic equilibrium with the surrounding sea water. Since shell do not live in the atmosphere their use of carbon, C-12 and C-14, is not the same for organisms that do. In radiocarbon years the Fiji Shell Standard = 412 years. It is probable that when a comparable shell standard is measured for Micronesia that it will be different from the Fiji Shell Standard. The resevoir effect adjusted age of the adjusted age = 140 ± 87 B.P. The dates are reported as radiocarbon years before A.D. 1950 with the half-life of 5568 years. The conversion 1950 - 140 = 1810. The calender date and range at 1 S.D. for this sample is A.D. 1810 ± 87; A.D. 1723 to A.D. 1897.

The interpretation of this date is that it represents late terracing activity. The shell dump is buried under a terrace and is exposed in the riser of the terrace. The dump is about half way from the bottom of the terraces to the crown. The late date suggests that terracing continued through the eighteenth century A.D. However, two cautions should be noted. There are historic accounts of this part of Babeldaob Island for the latter half of the range given above that indicate that Ngardmau had been abandoned sometime between 1820 and 1840 (Semper 1983). Apparently Ngardmau suffered a total defeat at the hands of Koror at this time, the time is roughly estimated. It is possible that the terracing took place just prior to the war with Koror. If the terracing took place it is doubtful that it took place

after the war with Koror. The second caution is that there are nearby areas which were modified during the Japanese administration, ca. 1940. Construction during this time often involved extensive bulldozing and modification to the land. Although no evidence of modern modifications was noted in the immediate area around the shell dump there are modern concrete foundations nearby and it is possible that the terrace was modified during the Japanese administration. The elderly couple who raise gardens on the terraces were questioned about the shell dump and they said that they remember the shell as always being in the garden. It is not known how long they have had gardens in this area. If the land was modified during the Japanese administration it is possible that a shell dump which had been recently created (a few people began moving back to Ngardmau around the turn of the century) could have been buried at that time. If this were to be verified it would nullify the argument that the shell dump dates an episode of terracing and suggests that the shell dump was not related to the creation or maintenance of terraces.

Beta-8090 = 380 $\pm$ 220 radiocarbon years B.P.

A sample of charcoal from B:NC-1:1, Test Pit 5, level 3, 20-22 cm below surface (see page 74 of this report) was submitted to Beta Analytic, Inc. of Coral Gables, Florida. The sample, Beta-8090, was small, only 0.1 gram carbon for the counter was obtained, and extended counter time was used. The C-14 age years B.P. $\pm$ 1 S.D. = 380 $\pm$ 220 B.P. The dates are reported as radiocarbon years before A.D. 1950 with the half-life of 5568 years. The conversion 1950 - 380 = 1570. The calender date and range at 1 S.D. for this sample is A.D. 1570 $\pm$ 220; A.D. 1350 to A.D. 1790. Unfortunately this wide range limits the strength of the conclusions. The date represents a late date for terracing. The sample is from a layer of terrace fill on an upper terraced surface of a terraced hillside. There was no evidence of any disturbance other than the already noted terracing. The date suggests that terracing continued into the fourteenth century A.D.

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APPENDIX B

SPELLING CORRECTIONS AND SELLING ALTERNATIVES

page number	Spelling in Text	Correction or Alternative
page 12, line 3	Kelelecharm	Kelelacharm
page 12, line 10	Blaches	Blacheos
page 13, line 5	Misderrak	Miskerrak
page 27, last paragraph-line 2	Ongekikl rar dioll	Ongsekikl rar dioll
page 28, last paragraph-line 2	Ongekikl rar dioll	Ongsekikl rar dioll
page 28, 2nd paragraph-line 2	Ongekikl rar dioll	Ongsekikl rar dioll
page 28, last paragraph-line 9	Ngchedub ra Ielch	Edub ra Ielch
page 29, Figure 12	Ngchedub ra Ielch	Edub ra Ielch
page 31, 3rd paragraph-line 4	Elud	Iliud
page 32, 2nd paragraph-line 2	Ngardman	Ngardmau
page 44, 1st paragraph-line 5	Ngerdolk	Ngerdok
page 53, 1st paragraph-line 1	Kedeu	Kerdeu
page 53, 1st paragraph-line 3	Kedeu	Kerdeu
page 55, 3rd paragraph-line 3	Elud	Iliud
page 66, 4th paragraph-line 2	Bairiyuoech	Baireobech
page 67, last paragraph-line 2	Ngerdiol	Ngerdioll
page 73, sub-title paragraph 3	Ngerdiol	Ngerdioll
page 74, last paragraph-line 2	Kedeu	Kerdeu